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NOVEMBER, 1954

TABLE OF CONTENTS

FEATURES—

Straight from Headquarters 680
The Impact of Recent Court Decisions on the Practice of Pharmacy, by Joseph H. Stamler 683
The Significance of Professional Economics to the Practicing Pharmacist, by Seymour B. Jeffries 687
Symposium on Antibiotics 693
Antibiotic Formulations by Frank H. Buckwalter 694
Clinical Applications of Antibiotics, by Lewis W. Kane 700
Antibiotics in the Hospital Pharmacy, by William E. Hassan, Jr. 702
Antibiotics in the Retail Pharmacy, by John J. Dugan 703

DEPARTMENTS—

American College of Apothecaries 676
A.PH.A. Branches 722
A.PH.A. Officials 660
Briefly Noted 723
Collector's Corner 678
FDA Legal Actions 721
Hospital Pharmacy 706
Letters 662
National Defense and Security 674
New A.PH.A. Members 712
New Prescription Products 716
Prescription Information Service 664
Recent Progress in Medicine 670
Typical Days 704

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Major Extension of Social Security

Because of the significant rôle pharmacists play in the business and social life of their communities, they will be interested in a summary of the social security amendments signed into law by the President on September 1, 1954. Of particular interest to retired pharmacists who like "to keep their hand in" doing relief work, is the amendment establishing $1,200 as the maximum amount of earnings without loss of social security benefits. Briefly, the amendments provide:

1. Extended coverage to 10.2 million additional American workers and their families. Nine out of ten workers are now covered.
2. Inclusion of many groups which up until now have not been included, among them, 5.5 million farmers and farm workers, 3.5 million State and local government employees, subject to referendum; self-employed professional engineers, architects, accountants, and funeral directors. Clergymen are also included on a voluntary basis.
3. An increase in monthly benefits on a percentage basis ranging from $5.00 to $13.50 per month for retired workers and proportional increases for dependents, including widows and orphans.
4. The dropping out of up to five years of lowest earnings in the calculation of benefits.
5. Protection of the benefit rights of workers during periods of total disability.
6. Benefits for the families of workers who had credit for a year and a half in social security jobs but who died uninsured prior to September, 1950.

The maximum monthly retirement benefits for a single worker of $108.50 per month under the amendments is the equivalent to the income from $32,500 in savings invested at 4 per cent.

The maximum for a married worker of $162.50 per month is the equivalent to the income from $48,000 in savings invested at 4 per cent. The $200 per month for a widow with two dependent children is equivalent to $60,000 in savings invested at 4 per cent.

New Label Writer

A new typewriter for speedy writing of prescription labels has been placed on the market. The specially constructed carriage placed on the typewriter holds four rolls of labels of different sizes. Each label section is controlled by an indicator knob located on the right of the machine. When a label is needed, the knob is turned to the size of label desired and that is the only roll that feeds through the machine while the label is being written. The machine may also be used as a regular typewriter. For the name and address of the supplier address your inquiries to the American Pharmaceutical Association, 2215 Constitution Avenue, N. W., Washington 7, D. C.

Current advertising in leading Medical Journals throughout the country will increase your prescriptions for this effective cold remedy.
How is your stock?
COLDS
Headaches, fever, malaise and generalized aches and pains of colds are relieved more efficiently by THENFADIL—S.P.C. This stable antihistaminic, analgesic, antipyretic combination contains
Thenfadil 15 mg.
Salicylamide 0.3 Gm. — quick-acting salicylate
Phenacetin 0.2 Gm. and
Caffeine 15 mg.
New
Thenfadil® - S.P.C.
More Efficient SYNERGISTIC THERAPY
DOSE:
Adults, 1 tablet (as soon as possible after the onset of a cold) t.i.d. for 3 days.
Children, 6 to 12 years, ½ tablet t.i.d. for 3 days.
Supplied in bottles of 50 tablets.
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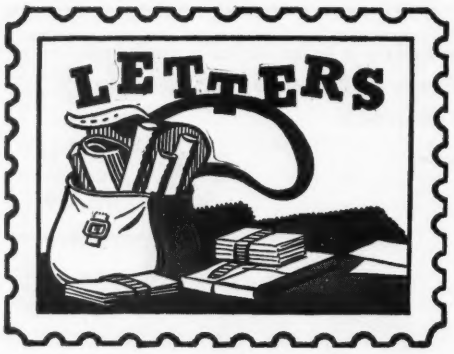

"Et Tu, Maryland"—A Reply

Sirs:

The August issue of the *Practical Pharmacy Edition*, JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, carried an editorial displaying undue and unwarranted alarm over a labeling regulation adopted by the State Health Department of Maryland.

It is quite obvious the author was totally uninformed or, more probably, misinformed about the particulars surrounding the adoption of the regulation in question, which, for those who are not familiar with the regulation is hereby quoted:

> "For those drugs (other than narcotics) that may be dispensed only on prescription, unless the prescriber has authorized refilling a definite number of times, the container in which such prescription is dispensed shall be labeled with the following or similar wording, in addition to the directions for use:—'This prescription cannot be refilled except on the prescriber's authorization to the pharmacist.'"

First, let it be pointed out the regulation stems from the Maryland Pharmaceutical Association and the Baltimore Retail Druggists Association. These organizations of retail pharmacists proposed and recommended its adoption. Before the adoption of the regulation it was discussed at a regional meeting of the Maryland Pharmaceutical Association, which meeting was attended by pharmacists from all over the state. At that meeting there were only two who voiced disapproval of it. It was later discussed at a meeting of the Baltimore Retail Druggists Association and not one at that meeting disapproved it! Have the pharmacists been betrayed? In fact, many, if not a majority, of pharmacists in Maryland were using such labeling long before the regulation was thought of.

Any contention that a patient or an attendant hasn't a right to know, when a prescription is delivered, that it cannot be refilled without the prescriber's authorization is about as illogical from every and all standpoints as anything conceivable. Why the mystery? Are we professionals in one phase and "medicine men" in another? The regulation is based on the provisions of the Durham-Humphrey Act and the State Dangerous Drug Law.

Just what is meant by, "The Maryland Law is bound to become confusing because it apparently provides that if a prescription calls for a non-legend drug it is not necessary to call attention to the fact that it is not renewable, by affixing a special label." There is no need to affix a non-refillable label for non-legend drugs. Such prescriptions can be refilled without authorization, and the regulation in no way applies to such drugs.

As to its being of no service to a patient for whom a legend drug has been prescribed to emphasize the fact that he is receiving a dangerous or highly potent drug, is beside the question. It is a service for the patient to know that if a further supply of the medication is advisable, the prescriber must so authorize, not the patient, attendant, or pharmacist. As to generating fear in the minds of patients to know they are taking habit-forming, toxic, or dangerous drugs—is just so much nonsense.

Patients who are under the care of physicians, in whom they have confidence, are little concerned about the medication prescribed for them so long as it has the desired effect.

With the passage of the Harrison Narcotic Act, prescriptions for narcotics have carried a non-refillable label. Has such labeling created fear in the minds of patients? Isn't it true many preparations that may be sold over the counter carry a label "warning—may be habit forming" as well as other cautions; yet these preparations are purchased and consumed without any degree of fear.

The statement, "one of the evils of legislation which has arbitrarily divided drugs into two classes" is not held as an evil by many pharmacists. Does a responsible pharmacist want to accept the responsibility of determining if a patient should continue a medication a physician prescribed for him for a particular illness, particularly where the modern specific drug is involved? Isn't it sound reasoning that a physician prescribes for his patient the quantity of medication that he considers is needed? Then the physician should determine if the medication should be continued or discontinued, and not the patient, attendant, or the pharmacist.

Ever since the passage of the Durham-Humphrey Act, a small group has seen fit to take snipes at it at every opportunity, notwithstanding pharmacists had much to do with the provisions of the Act. As long as this is a law it must be respected.

Regardless of the efficiency or effectiveness of enforcement work it is no secret that there are many violations that are impossible to detect until some tragedy or near tragedy occurs. This is what we are making an effort to avoid. Instead of betraying the pharmacist we are protecting him.

L. M. KANTNER, *secretary*
Maryland Board of Pharmacy

[Dr. Kantner is chief of the Division of Drug Control of the Maryland Department of Health as well as secretary of the Maryland Board of Pharmacy. He is therefore the law enforcement officer whose duty it is to enforce the pharmacy and drug laws of the state, and he does a good job.

Law enforcement officials, in general, are interested in simplifying law enforcement procedures. If this can be done by requiring some such device as an additional label, the law enforcement official considers it a worthwhile contribution without pay-

(Continued on page 708)

Let these experts on relaxing show you how to live with HIGH BLOOD PRESSURE
How many of these people need a doctor?
There's brighter outlook now for the child with EPILEPSY...

PARKE-DAVIS National Advertising-

WHAT IT MEANS TO THE RETAIL PHARMACIST

This much-talked-about magazine campaign is unique.

It isn't a "Doctor" campaign exclusively. (Though it is appreciated and recognized by physicians as an outstanding public relations effort in their behalf.)

Nor is it primarily a "Druggist" campaign. (Though it consistently portrays the pharmacist as a professional man.)

It is something much more fundamental—because it dramatizes to millions of people the importance of prompt and proper medical care, thus heightening the respect of the general public for both the physician and the pharmacist.

Parke-Davis has been carrying on this confidence-building campaign for twenty-six years, through the medium of national magazines of large circulation and wide influence—SATURDAY EVENING POST, LIFE, TIME, NEWSWEEK, and other leading publications.

We believe these messages in the public interest have produced some very practical results:

(1) More patients for the physicians in the area served by your store.

(2) More prescriptions brought into your store —and more customers for prescription accessories that should logically be supplied by pharmacists.

(3) Added assurance to you that you can proudly feature Parke-Davis pharmaceuticals, surgical dressings, and vitamin products in the knowledge that the Parke-Davis name and label will be familiar to and highly respected by your customers.

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Members of the American Pharmaceutical Association are invited to submit their professional problems to The Journal, 2215 Constitution Ave., N. W., Washington 7, D. C., giving all pertinent details in your first letter.

Ichthyol in Lassar's Paste

Can you tell me why Ichthyol (3% conc.) in Lassar's Paste will sometimes give a grainy appearance? Sometimes I warm it, and still the results seem to be the same.—M. H., Washington.

In THIS JOURNAL, **15,** 32(Jan., 1954), P. L. Burrin states that zinc oxide paste U. S. P. (Lassar's plain zinc paste) prepared from petrolatum made from Pennsylvania crude oil can be melted with gentle heat to aid the incorporation of other ingredients, and it will not be grainy on cooling. Petrolatums originating from some other crude oils cause a granulation in warmed zinc oxide paste.

Old and hardened stocks of Ichthyol will yield grainy products. Ichthyol that has been stored in a very warm place or that has been heated can lose ammonia, and the free sulfonic acids might then react with zinc oxide to form insoluble salts that would yield a grainy product. Washable ointment bases, such as those reported by R. E. Saute and C. O. Lee and by S. W. Goldstein [THIS JOURNAL, **15,** 39 and 41 (Jan., 1954)], could easily serve as vehicles for the ingredients of the zinc paste and the Ichthyol.

Coal Tar Ointment—Water-Miscible

How can the following prescription be compounded to prevent the coal tar flaking out?

℞ *Zinc oxide*
Starch
Glycerin
Water *aa equal amounts*
With 3% coal tar

—C. D. K., South Dakota.

A smooth ointment can be prepared by replacing part or all the water with a water-miscible ointment base. One of the commercially available emulsifiable bases or the base prepared in the A.PH.A. laboratory can be used. See THIS JOURNAL, **15,** 41(Jan., 1954).

In consideration of the increased efficiency and absorption of the tar when emulsifiable bases are used, the concentration of the tar should be reduced to 1 or 2%.

Procedure 1. Levigate the zinc oxide with the coal tar. Mix the starch and glycerin, then add the zinc oxide and tar mixture in small portions with thorough mulling. Add the water-miscible base and mix thoroughly.

Procedure 2. Levigate the zinc oxide with the coal tar. Mix the starch, glycerin, half the formula amount of water, and an amount of water-miscible base equal to the amount of water. Incorporate the zinc oxide and tar mixture in the mixed base, adding small portions with thorough mixing.

Aspirin, Phenacetin with Tinctures of Aconite and Gelsemium

How should the following prescription be dispensed?—J. D. R., Alaska.

Aconite tincture	½ *fl. dr.*
Gelsemium tincture	*1 fl. dr.*
Aspirin	*2 dr.*
Phenacetin	½ *dr.*
Chloroform water q.s.	*4 fl. oz.*

Aconite tincture contains hydrochloric acid which would hasten hydrolysis of the aspirin to free salicylic acid. The reduction in alcohol concentration will precipitate the materials soluble in the 60–65 per cent of alcohol in the tinctures. If the physician agrees, the aspirin and phenacetin may be dispensed in capsule form, and the remaining ingredients could be mixed with acacia or tragacanth and dispensed as a "shake" mixture. If the physician insists on one liquid product, add a suspending agent to the entire mixture and dispense with a "shake-well" label. Kaolin and pectin might also be considered for the suspending agent [see THIS JOURNAL, **14,** 293 (1953)].

Methyl Salicylate and Capsolin Ointment

How can the following prescription be compounded?—J. D. R., Alaska.

Capsolin oint	*1 dr.*
Methyl salicylate	*1 oz.*
Ointment base q.s. to	*3 oz.*

Mix the Capsolin ointment and methyl salicylate and add the mixture to a melted "ointment base" consisting of equal parts of hydrous wool fat and petrolatum. The base is given in the British Pharmaceutical Codex 1949, page 1383, and is used as a vehicle for methyl salicylate. If you wish to avoid too much absorption of the methyl salicylate, you can use a base composed of equal parts of petrolatum and beeswax. Melt the constituents of the base and mix until the temperature is about 40° C., then add the methyl salicylate in small

(Continued on page 666)

Upjohn

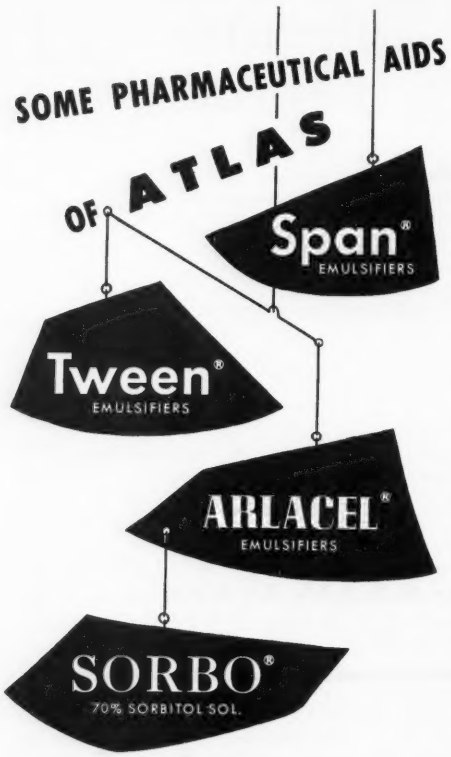
diarrhea...

Kaopectate

Trademark, Reg. U.S. Pat. Off.

Each fluidounce contains:
Kaolin . . . . . 90 grs.
Pectin . . . . . 2 grs.
in an aromatized and carminative vehicle
Available in bottles of 6 and 10 fluidounces and 1 gallon

The Upjohn Company, Kalamazoo, Michigan



These adjuncts, widely adapted by pharmaceutical manufacturers for their standard products, may be obtained for extemporaneous compounding from the following suppliers:

Boston, Mass.
Gilman Brothers, Inc.
100-112 Shawmut Ave.

Cincinnati 6, Ohio
Hill Top Research Institute, Inc.
925 Wm. Howard Taft Road

Los Angeles 21, Calif.
Mefford Chemical Co.
1026 Santa Fe Ave.

New York 11, N. Y.
R. F. Revson Co.
243 W. 17th Street

Portland 10, Oregon
Van Waters & Rogers, Inc.
3950 N.W. Yeon Ave.

San Francisco 19, Calif.
Braun-Knecht-Heimann Co.
1400 16th Street

Seattle 4, Wash.
Van Waters & Rogers, Inc.
4000 First Ave. South

Wilmington, Del.
Laboratory Center, Inc.
919 Washington St.

CHEMICALS DEPARTMENT
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

℞ Information Service

• • • • • • • • • • • • • *from page 664*

portions with constant mixing until cooled to room temperature.

Aspirin in Cherry Syrup

Please advise how the following can be prepared as a clear preparation?—J. D. R., Alaska.

Aspirin	*2 dr.*
Cherry syrup q.s.	*3 fl. oz.*

The aspirin can be mixed with 4 drams of potassium citrate and 1 fluidounce of water, and cherry syrup added to make 3 fluidounces. If the physician permits it, the use of 1 fluidounce of high alcoholic elixir instead of the water or part of the syrup will further stabilize the solution. However, it would still be wise to place a "shake" label on the bottle.

Aspirin in the form of a stable, soluble calcium salt that could be used in this type of prescription is marketed under the name Disprin by Reckitt and Colman, Ltd., London, England. It is probably available in Canada.

Magnesium Citrate Solution

Will appreciate information on modern method for manufacturing citrate of magnesia in quantity; where modern equipment can be obtained; and if, under present manufacturing methods, potassium bicarbonate is used to effect effervescent action.—J. J. D., Louisiana.

The procedure for the manufacture of magnesium citrate solution given in the U. S. P. XIV monograph can be utilized for large batches. Note particularly the "stability improvement" statement in paragraph 3, page 325. Potassium bicarbonate or sodium bicarbonate with or without additional carbonation with carbon dioxide, can be used.

Equipment for the manufacture of liquid pharmaceutical preparations can be obtained from: Ertel Engineering Corp., Kingston, New York; and F. J. Stokes Machine Co., Tabor Road, Olney Post Office, Philadelphia 20, Pennsylvania.

These firms will probably have helpful information on the applications of their equipment.

Sodium Lauryl Sulfate Suppositories—Source

Information on the use of sodium alkyl sulfate in suppositories was given in THIS JOURNAL, **15,** 391 (July, 1954). A commercial source of suppositories, each containing 100 mg. of sodium lauryl sulfate, is Smith-Dorsey Division of the Wander Company, Lincoln, Neb., whose product is Neutrazyme Suppositories.

PHOTOGRAPH BY VICTOR KEPPLER

Penicillin—that she can *drink*

PENALEV®

SOLUBLE TABLETS POTASSIUM PENICILLIN G

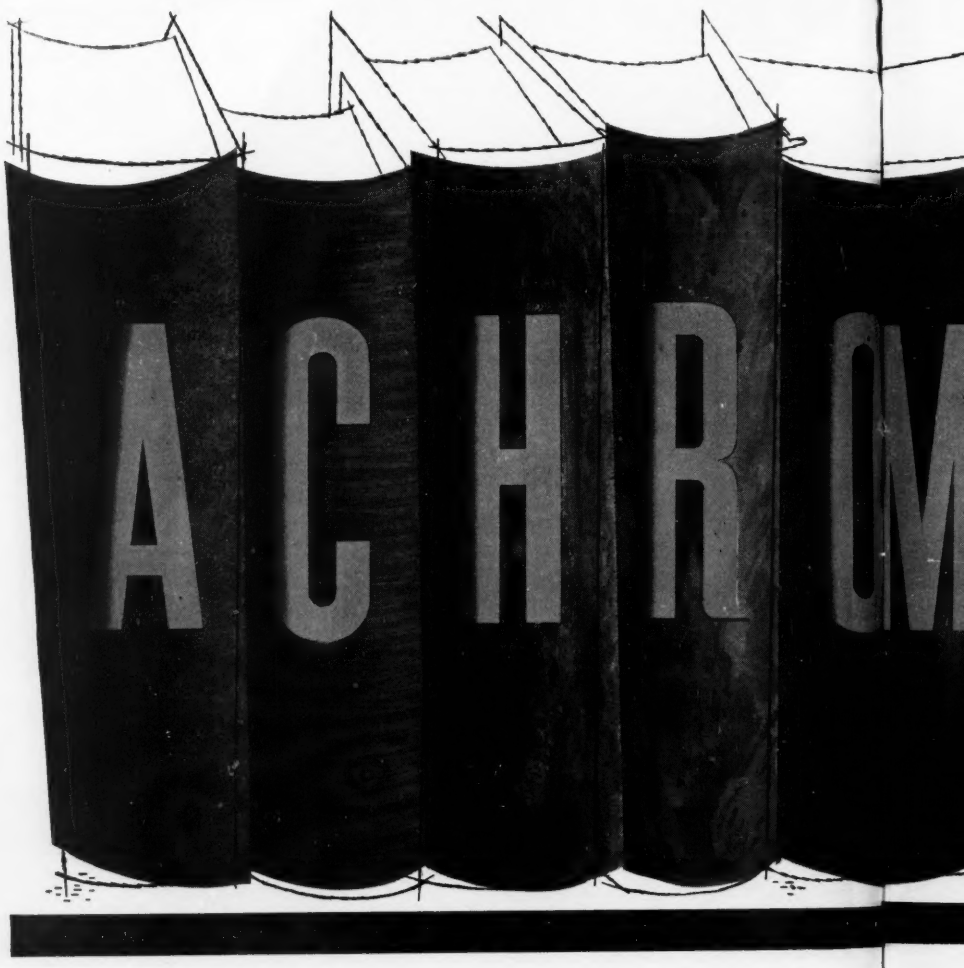
Readily soluble in milk, fruit juice, infant formulas, PENALEV is a highly agreeable way to give penicillin to your young patients. "The rheumatic child who should receive routine year-round penicillin prophylaxis,"[1] won't object to penicillin when she can drink it.

PENALEV is effective in all infections where oral penicillin is indicated. Its solubility makes it a useful form for regulation of dosage. Convenient for prescription compounding, too.

Quick Information: PENALEV is supplied in soluble tablets of 50,000, 100,000, 200,000, 250,000, 500,000, 1,000,000 units of potassium penicillin G each. Dosage depends on type and severity of the infection.

Reference: 1. J.A.M.A. 151:347, 1953.

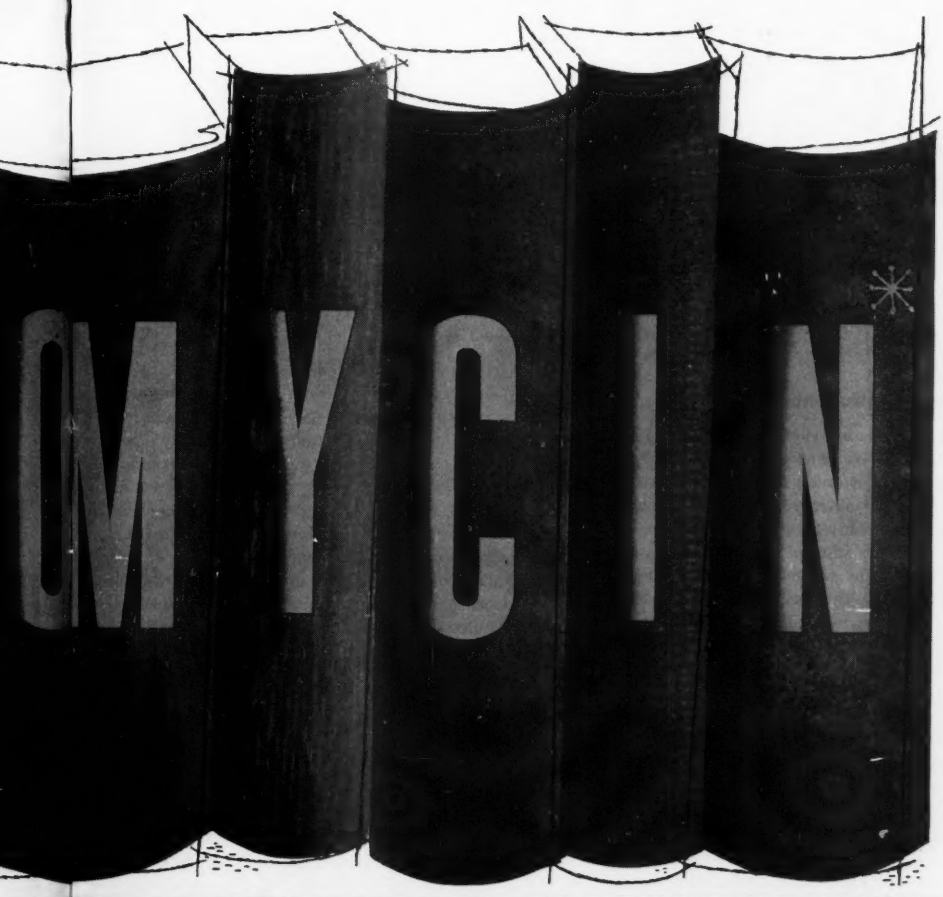
This advertisement is appearing in current medical journals as part of Sharp & Dohme's promotion to the profession.



Medical history is being written todo

Lederle

*REG. U.S. PAT. OFF.



TETRACYCLINE *LEDERLE*

ACHROMYCIN, the *original* brand of tetracycline, is today the *leading* brand of tetracycline—the one you can profitably stock in all its many dosage forms: tablets, capsules, pediatric drops, oral suspension, SPERSOIDS* Dispersible Powder, intravenous, intramuscular, soluble tablets, topical ointment, and ophthalmic ointment.

ACHROMYCIN approaches the ideal broad-spectrum antibiotic, effective against Gram-positive and Gram-negative bacteria, as well as many mixed infections.

ACHROMYCIN has the advantage of minimal side effects, and provides prompt diffusion in body tissues and fluids.

ACHROMYCIN enjoyed a remarkably rapid adoption, and its widespread use indicates that it is destined to take its place among the great therapeutic agents.

LEDERLE LABORATORIES DIVISION *AMERICAN Cyanamid COMPANY* PEARL RIVER, NEW YORK

RECENT

PROGRESS IN MEDICINE

Effect of Trypsin Administered Intravenously

A Denver physician reviews the intravenous use of trypsin administered in doses of 200,000 Armour units in 200 cc. of saline. He stresses particularly the reactions he has observed and which he classifies as immediate (upon injection), latent (always about two hours after the start of the first infusion, only occasionally with the second, rarely with the third on successive days), and secondary (thrombotic and embolic, in special cases). The physician concludes: "Trypsin seems to have a place in the treatment of certain inflammatory disease processes. As yet we do not know how to control adequately the side-reactions related to its use. Whether these are associated with the present inability to understand proper dosage requirements or whether they are due to impurities present in the trypsin is yet to be determined. A great deal more study needs to be done before this drug can be freely used in the treatment of patients. It may be that the dangers and reactions associated with trypsin will seriously limit the use of this particular enzyme when it is administered intravenously."

[Peck, Mordant E., *J. Am. Med. Assoc.*, **154,** 1260 (April 10, 1954).]

Antitussive Action of Dextromethorphan Hydrobromide

A study of the effect of dextromethorphan HBr (*d*-3-methoxy-N-methylmorphinan HBr; Romilar HBr, Hoffmann-La Roche) on cough due to various conditions in 144 patients is reported by Dr. Nathan Ralph. He found that 54 patients (37.5%) had marked to complete relief of cough; 67 (46.5%) derived moderate; and 23 (15.9%) had no to slight relief of cough. Doses of 15 mg. four times daily produced better results than did 4 mg. four times daily. Hemograms done initially, after 2 weeks, and terminally for 23 patients who were given the drug in large doses over a prolonged period and of whom 20 received a total of 2.40 Gm. each within 32 days (daily doses of 75 mg.), did not show any untoward effects on the hematopoietic system. Similarly, these chronic toxicity trials failed to reveal any other side-effects, particularly on renal function, respiration, or blood pressure. There was no evidence of development of tolerance or addiction in these 23 cases or in any of the patients who received the drug as cough suppressant for as long as 6 months. In the entire series of 183 cases the drug had to be discontinued because of nausea, vomiting and dizziness in one instance only. In addition, there was dizziness in one patient on a daily dose of 60 mg., but 30 mg. were tolerated without this sequela. Thus side-effects from the drug were rare. The physician concludes that the resolution of *dl*-3-methoxy-N-methylmorphinan into its optically active components provided a compound: *d*-3-methoxy-N-methylmorphinan, which in form of the hydrobromide is a very effective and safe cough-suppressing agent having the antitussive activity of codeine without sharing its addictive properties and without producing the side-effects typical of codeine.

[Ralph, N., *Am. J. Med. Sci.*, **227,** 297(Mar., 1954).]

Synergism and Antagonism in Antibiotic Combinations

Studies reported by three investigators of interrelated antibacterial effects of some antibiotics show that certain synergistic and antagonistic results of mixtures may be explained. The findings indicate a strong synergism between neomycin and polymyxin B, and since neomycin is a broad-spectrum antibiotic and polymyxin B is effective against *Ps. aeruginosa*, a combination of the two could be advantageous; however, a triple combination adding gramicidin to these two appears to be of less value than either antibiotic alone. The fact that carbomycin (Magnamycin), bacitracin, and tyrothrycin are active against the same organism could explain

relieve cold symptoms... curb complications

CORICIDIN®
with
PENICILLIN

150,000 units Penicillin G Procaine

- analgesic
- antibiotic
- antihistaminic
- antipyretic

SCHERING

Schering

CORICIDIN *with* PENICILLIN

why there appears to be an antagonistic effect between carbomycin and the others. Polymyxin B and carbomycin are active against different organisms and this could explain the absence of an antagonistic effect. It also appears that a combination of carbomycin and polymyxin would increase the spectrum of the combined product. Neomycin, polymyxin B, tyrothricin, gramicidin, bacitracin, and carbomycin have been tested for synergism. Neomycin and polymyxin B display a strong synergism, while carbomycin and polymyxin B are neither synergistic nor antagonistic. It appears that a combination of neomycin and polymyxin would be advantageous against most bacterial infections.

[Barr, F. S., Carman, P. E., and Harris, J. R., *Antibiotics & Chemotherapy*, **4**, 818 (July, 1954).]

Anticoagulant Therapy—Complications of

Therapy with anticoagulant drugs is reviewed concisely by an Air Force physician who reports on an observed case. He notes that although heparin is considered the least dangerous anticoagulant because of its brief activity, phenylindanedione, used properly, has a low incidence of toxic side effects. The side effects in a case of thrombophlebitis treated with heparin and then with dicumarol are reported. "Direct effects of anticoagulants on the vascular wall have not been determined," the physician states, "and individual idiosyncracies cannot be predicted."

[Rainie, Robert C., *New England J. Med.*, **250**, 810 (May 13, 1954).]

Cortisone and Hydrocortisone in Severe Tetanus

Tetanus is still quite common in tropical areas. In India, where patients may not report for treatment until late in the course of the disease, the mortality is 46 to 56 per cent. A study of forty patients with severe tetanus is reported by five physicians from Bombay. The average period of onset was less than twenty-two hours. All patients received two injections of 120,000 units of antitetanus serum, a daily injection of 400,000 units of penicillin, intramuscular paraldehyde (4–8 cc.) and indicated supportive measures. Half of the patients were also treated with adrenal hormone. Cortisone was injected in five patients and given orally to ten, while hydrocortisone was given orally to five others. Insofar as possible, the dose of hormone was that amount that appeared to be just sufficient to counteract or prevent a rise in temperature. When cortisone was given intramuscularly, there seemed to be an aggravation of muscular spasms, but, when cortisone or hydrocortisone was given orally, there was a diminution in the intensity and severity of the convulsions. Among the 20 controls there were 3 survivors. None of the patients receiving injections of cortisone recovered, while 2 out of 5 patients getting hydrocortisone and 6 out of 10 patients getting cortisone by mouth recovered. Results obtained with cortisone administered orally are statistically significant and consistent with clinical observations as well as with previously reported beneficial effects obtained with corticotropin.

[Lewis, R. A., *et al.*, *J. Am. Med. Assoc.*, **156**, 479 (Oct. 2, 1954).]

Accidental Poisoning by Veratrum Japonicum

The clinical symptoms observed in 14 Korean males who had eaten soup made from wild young spring greens, among which was *Veratrum nigrum* L. var. *japonicum* (Baker), are described in a report by a U. S. Army physician. The symptoms of intoxication closely parallel those produced by *Veratrum* species in humans and domestic animals. *V viride* grows in northeastern United States in low meadows and pastures, in the mountainous western states, and *V. californicum* Dur. grows in wet meadows in the valleys between higher mountains. Since the practice of picking "wild greens" in the springtime is indulged in by Americans in rural areas, the clinical symptoms described could aid in the diagnosis of poisoning by veratrum plants. The noted symptoms are: profuse vomiting, prostration, weakness, and visual disturbances (seeing circles, yellow sheets of flame, and yellow and green spots before the eyes; inability in some cases to move the eye from a position of forward gaze). The patients were given 1000 cc. of saline solution intravenously before examination and were later administered epinephrine subcutaneously and by intravenous instillation.

[Nelson, D. A., *J. Am. Med. Assoc.*, **156**, 33 (Sept. 4, 1954).]

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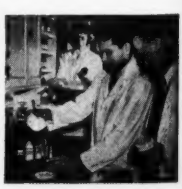

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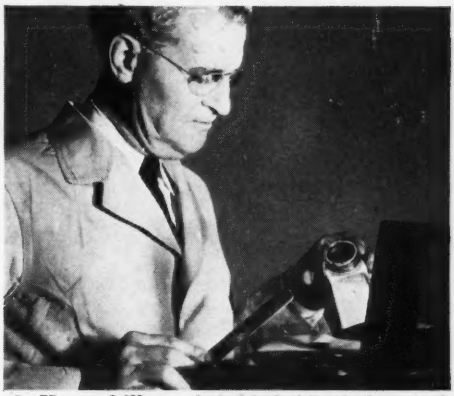

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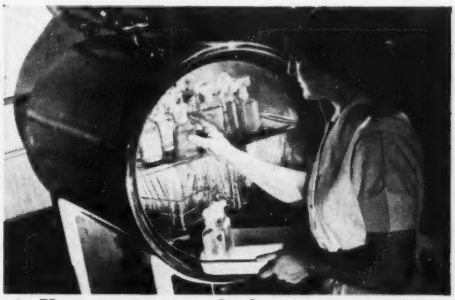

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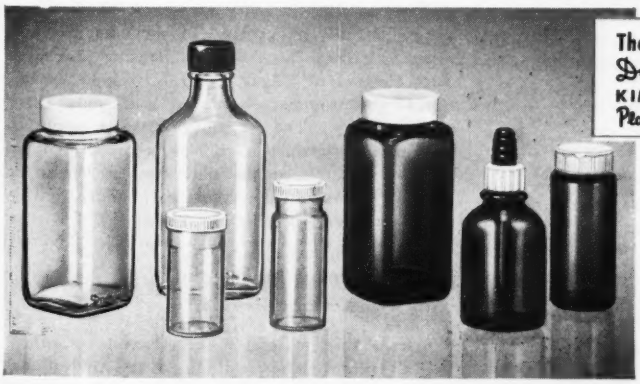

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NATIONAL DEFENSE ★★and SECURITY★★

Public Affairs Director Honored

The Federal Civil Defense Administration has presented its Distinguished Service Award to John A. DeChant, director of Public Affairs, whose appointment as executive director of the American Heritage Foundation was announced October 8.

M.I.T. President Heads Scientific Resources Panel

Dr. James. R. Killian, Jr., president of Massachusetts Institute of Technology, has been appointed to head a panel of scientists studying methods to mobilize more effectively scientific resources in the event of an emergency. The panel will be made up of engineers and scientists from universities, industry, and various Federal agencies.

Receives Highest Civilian Award

Charles R. Peck, Washington, D. C., has been awarded the Navy's highest civilian award for "extraordinary performance" of duties as director of the Industrial Relations and Manpower Division, Navy Bureau of Ships. Peck has served in the Bureau of Ships since August, 1946, following active duty as a Lieutenant Commander in the U. S. Naval Reserve. He has been director of the Industrial Relations and Manpower Division since May, 1947.

Researchers Devise New Portable Resuscitator

A portable anesthetic machine and resuscitator that could be used anywhere from a dentist's office to a battlefield is described in the *J. Am. Med. Assoc.*, **156**, 604(Oct. 9, 1954). It was developed by researchers at Western Reserve University and the University Hospitals of Cleveland. The device, without tanks attached, weighs about 17 ounces and can be held in the palm of one hand. It has a rubber face mask, a rebreathing bag, and two aluminum arms to contain gas or oxygen cylinders. It could be used by dentists, by patients with heart trouble, at home or in the office; as a gas mask; by passengers of planes at high altitudes; and by police- and firemen in drowning accidents, mine explosions, fires, and other suffocation emergencies. The apparatus could be dropped undamaged from a plane even without a parachute to forward positions on the battlefield and in disaster areas.

Many Nurses but More Needed

Nearly 400,000 nurses—an increase of 16,000 since 1950—are now working in the U. S., according to new figures announced by Surgeon General Leonard A. Scheele of the Public Health Service. Estimates based on the latest available figures from the 48 states and District of Columbia show a total of 389,600 professional nurses in active practice in the Nation. However, the demand for nursing services is so great, Dr. Scheele said, that the present recruitment goal for the nation as a whole is 55,000 student nurses a year.

GI Home Builders' Warranty

GI home builders now are required to give veteran purchasers a one-year warranty that their homes have been constructed in "substantial conformity" with Veterans Administration-approved plans and specifications.

The one-year warranty was put into effect October 1, 1954, under the Housing Act of 1954, which stipulates that all new housing purchased with the aid of VA or Federal Housing Administration guaranteed or insured loans must carry the warranty. The warranty does *not* apply to existing homes which have been occupied for more than a year. It applies only on new homes for which VA has issued a Certificate of Reasonable Value on or after October 1, 1954.

Reserve Nurses May Train With Air National Guard

Nurses of the Air Force Reserve have been authorized to train with hospital units of the Air National Guard, marking the first time in the National Guard's 300-year-old history that women have served with the Guard in peacetime. A total of 162 nurses, six in each of the Air National Guard's 27 Tactical Hospitals, will fill mobilization assignments. These nurses will retain their reserve status while in training.

ELECTRON PHOTOMICROGRAPH

Diplococcus pneumoniae 35,000 X

Diplococcus pneumoniae (Streptococcus pneumoniae) is a Gram-positive organism commonly involved in

lobar—and bronchopneumonia • chronic bronchitis • mastoiditis • sinusitis

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ROBERT E. ABRAMS, *executive secretary*

West Virginia Fellows Hold Seminar

A pharmacy seminar was held under the auspices of the West Virginia Fellows of the American College of Apothecaries at the Stonewall Jackson Hotel in Clarksburg, West Virginia. Pharmacists from a tri-state area attended the program which proved to be extremely interesting. Appearing on the program were E. J. Carroll, director of Economic Research, Sharp & Dohme, Division, Merck and Co., who discussed the important subject of "Pharmaceutical Economics." Following him was Dr. Robert L. Swain who offered concrete suggestions for "Merchandising Our Basic Resources." An open forum followed the two presentations.

A social hour and a banquet were held as part of the seminar, and as guest speaker the registrants heard Dr. John G. Adams, associate professor of Pharmacology, School of Pharmacy, Duquesne University, discuss "The Integration of the Medical Professions—A Necessity in an Expanding Public Health Program." This was the second seminar conducted by the West Virginia Fellows and was under the chairmanship of Donald Annan, F.A.C.A., of Fairmont, West Virginia. Minter Ralston, F.A.C.A. of Weston, West Virginia, served as toastmaster for the banquet.

Newsletter Service Offered

The College is making available to its members a monthly newsletter service designed to be mailed to physicians. Starting with November these letters will go out monthly to over 25,000 physicians throughout the United States. The information contained in the letters will include specific news on new forms of therapy, as well as information on selected new products being made available. This service developed as a result of a survey conducted by the College which indicated that the individual newsletter sent out by the pharmacist represents by far the most effective form of professional promotion. The service being offered is complete and includes composition, printing, addressing, and mailing.

Public Education Program Celebrates First Birthday

With the November issue of the public education material now being mailed, the College has completed the first year of what has proved to be a most successful public relations program. After careful consideration, the College has decided to continue to make the program available to all pharmacists and notices are now being sent out for renewals of subscriptions. Many fine comments have been received from both the public and medical profession and the College intends expanding the existing program. The service includes providing each month 1,000 prescription inserts and 100 bill enclosures, plus a counter card. Each monthly message is designed to point out certain important factors concerning the profession of Pharmacy.

CHECK YOUR VACCINATIONS

Do you know the diseases to which you are now immune? Can you remember which shots you and your children have had and when each shot was given?

Public and private health services can make immunization available, but the individual must keep his own record if he or she is going to enjoy full protection. It is needed when you move to a new school district, change doctors, when an epidemic raises the question of your protection, when you have to present evidence of inoculation to an employer, a college, the armed forces, or the passport authorities. Indeed, if you step on a rusty nail, accurate information about your previous experience with tetanus immunization may well save your life.

The easiest way to handle the situation is to start a health record for every member of the family. The following timetable is suggested by Lederle Laboratories:

The first year of life: A series of three Tri-immunol injections (protects against diphtheria, whooping cough, and tetanus) usually given at 3, 4, and 5 months or earlier if your pediatrician advises; smallpox vaccination, usually at 6 months.

On entering school: A booster injection of Tri-immunol; small pox vaccination.

Three years after entering school: Booster shots against diphtheria and tetanus. Tri-immunol may be given, but the danger from whooping cough declines after the age of eight. In place of a diphtheria booster, many doctors give a Schick skin test to determine whether the child is susceptible to diphtheria.

Five years after entering school: A smallpox vaccination.

Six years after entering school: Booster shots against diphtheria and tetanus. Tetanus is very important especially for boys who are apt to cut themselves playing in dirt at this age. No matter how recent your immunization, you should go to the doctor and get a shot whenever you suffer a dirty wound.

Throughout life: Booster shots of tetanus toxoid should be given every three years. Smallpox vaccination should be repeated every five years. If you are going abroad or vacationing in the country your doctor may wish to give you a shot against typhoid fever, Rocky Mountain spotted fever, or other diseases you are apt to encounter for the first time.

It is not only performing a useful service, it is also good business for pharmacists to keep the public informed of such matters.

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"RAU-SED" AND "RAUDIXIN" ARE SQUIBB TRADEMARKS

Collector's CORNER

by George Griffenhagen*

Montana Historical Museum Planned

Plans to restore Montana's first drug store have been announced by Reverend James P. Dowdall, pastor of St. Mary's Mission, Stevensville, Montana. The Montana State Pharmaceutical Association passed a resolution at its meeting this year urging its members "to cooperate with this worthy effort by making available any item of historical interest to pharmacy for inclusion in this museum. . . (and) that Father Dowdall be commended for his interest and efforts on behalf of historical pharmacy."

The original pharmacy at St. Mary's Mission was established in a log cabin in 1845 by Reverend Anthony J. Ravalli. In this structure, which is still standing, have been found Father Ravalli's saddlebags, his medicine chest, and various medicine bottles from which he used to dispense drugs to the white settlers and the Indians. In 1941, on the occasion of the centenary of the founding of St. Mary's Mission, the original pharmacy was partly restored, but since then the material has been in storage.

Pharmaceutical Philately

Professor Herbert C. Raubenheimer of the New England College of Pharmacy presented a paper before the AMERICAN PHARMACEUTICAL ASSOCIATION's Section on Historical Pharmacy this year in Boston, on his hobby—pharmaceutical philately. According to Raubenheimer, only one postage stamp has been issued in honor of a pharmaceutical assemblage. In 1948 Cuba issued a stamp to commemorate the First Pan American Congress of Pharmacy which was held in Havana. However, numerous other postage stamps of pharmaceutical interest include the proprietary stamps (both private and government issues used for tax purposes); advertising stamps (New Zealand issues of 1893 which utilized the gummed space on the back of the stamp for advertising purposes); and the regular postage issues of numerous countries throughout the world commemorating famous pharmacists and medical scientists.

Readers interested in pharmaceutical philately will find absorbing a recent publication by W. J. Bishop and N. M. Matheson. It is entitled "Medicine and Science in Postage Stamps," published by Harvey and Blythe Ltd., London, 1948, 82 pp. Another excellent source of information is the journal, *Topical Time*, a philatelic publication devoted exclusively to topical collecting. An example of an article of pharmaceutical interest found here is Clare McAlister's "Materia Medica," *Topical Time*, **2,** 80 (May-June, 1951).

Evolution of Surgical Dressings

An exhibit tracing the evolution of surgical dressings from prehistoric times to the bandage of today is depicted in a new Smithsonian Institution exhibit. The exhibit, sponsored by Johnson and Johnson, features a bandaged 1500-year-old Peruvian skull on which the original surgical dressing of finely woven cotton gauze is still held in place by strands of llama hair cord.

Curator Griffenhagen points out surgical dressings exhibit to U. S. National Museum Director Kellogg and Johnson & Johnson Vice-President Lycan

Random Notes

Wanted: an original 19th century leech jar, complete with perforated lid, and painted label.

For Sale: an original bronze mortar, dated 1634, origin unknown. For further details, write, "Collector's Corner," in care of THIS JOURNAL.

* Associate Curator, Division of Medicine and Public Health, Smithsonian Institution, Washington, D. C., and Consultant to the A.PH.A. Museum.

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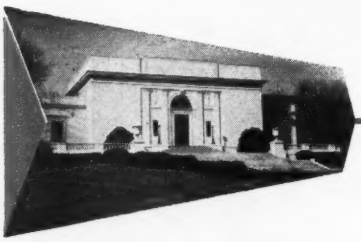

STRAIGHT FROM HEADQUARTERS

ROBERT P. FISCHELIS, EDITOR

"Man's Right to Knowledge and the Free Use Thereof"

UNDER this somewhat intriguing heading, Columbia University is in the process of concluding a series of seminars, convocations, conferences, and celebrations arranged throughout the year 1954 to commemorate the 200th anniversary of its founding.

To pharmacists the occasion is significant because it coincides with the 125th anniversary of the founding of the New York College of Pharmacy, which has been affiliated with Columbia University since 1904.

It was in the classroom of the College of Pharmacy of the City of New York where a group of practicing pharmacists from New York, Philadelphia, and Boston gathered on October 15, 1851, to discuss ways and means of improving the education and training of pharmacists and combating the importation of adulterated drugs which were hampering the medical profession in its task of healing the sick. There they decided to call a more representative national meeting the following year at Philadelphia in order to form an organization which could cope with the problems of the expanding American profession of Pharmacy and the drug industry. This led, in 1852, to the founding of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Many of the graduates of Columbia University's College of Pharmacy have played important rôles in the history of the AMERICAN PHARMACEUTICAL ASSOCIATION, and the present faculty and trustees, as well as students of the College of Pharmacy of Columbia University, are active today in the ASSOCIATION'S affairs.

The program of Pharmacy's part in the Columbia Bicentennial Celebration occupied two days under the direction of a special committee headed by George Merck. Its theme was "Pharmacy and the Conquest of Disease." It covered such topics as the importance of nutrition in the treatment of health disorders; the challenge to pharmacy in the need of "drugs designed to defeat death"; the role of antibiotics and chemotherapy in treating infectious diseases; the pharmaceutical approach to mental diseases; progress in production and application of endocrines, natural and synthetic; the problems of the aging; economic aspects of today's gains in health; the relatively low cost of medical care as compared with the volume of scientific research in behalf of the extension of the span of life; the safeguards provided through the development of drug standards and their enforcement; the extent of the services of the practicing pharmacist; the educational program of Pharmacy; and the facilities of the community pharmacy for the dissemination of information to the public.

Pharmacy's participation in the bicentennial program thus added a significant chapter to the record of advancement in the arts and sciences aided by the educational resources of one of America's foremost universities.

But let us go back for a moment to the intriguing theme for this bicentennial celebration, "Man's Right to Knowledge and the Free Use Thereof." Throughout the bicentennial year Columbia University has been focusing attention on the advancement of knowledge through the processes of education and on the results of the free use of that knowledge as exemplified in the almost unbelievable scientific discoveries and inventions of the atomic age.

Man's right to knowledge and the free use thereof has not been accepted universally. It has even been questioned to some extent

in the practice and regulation of the professions. There are occasional indications in the profession of Pharmacy and in the drug industry of a certain intolerance with regard to the free use of knowledge. This has become manifest especially in connection with the modern education of the pharmacist.

It has been said on a number of occasions in recent years and by some very well informed and erudite persons that the present and proposed standards of education of the pharmacist are going beyond the everyday needs for the practice of the profession. The view has been taken by some that no further broadening of educational requirements is needed for the adequate training of pharmaceutical personnel and that additional education for pharmacists will make the costs of their services too high.

Conversely, the view has been expressed that the modern education of a pharmacist prepares him for a much broader service to the public than he is permitted to give under the law. Objection has been voiced also to allowing pharmacists to make use of the knowledge of the action of drugs they possess in behalf of the public which they serve. Educated pharmacists are in a position to give advice both for and against the use of drugs and on the relative merits of different brands of the same drug.

The possession by pharmacists of knowledge as to the composition, standards, and proper dosage forms of drugs is resented in some quarters on the ground that its free use might be damaging to the interests of producers.

It is well, therefore, to emphasize on the occasion of Columbia's Bicentennial and on the 125th anniversary of the founding of its College of Pharmacy, that "man's right to knowledge and the free use thereof" includes the pharmacist's right to greater and greater knowledge of the actions, uses, preparation, and dosage forms of drugs and to the free use of that knowledge by those who are competent to make use of it. Any restrictions on the use of such knowledge should apply only to those unqualified by law or by training to employ it in the public interest. The obligation of the possessors of medical and pharmaceutical knowledge is to use it fairly, honestly, and with due regard for the ethical codes which govern the practice of Medicine and Pharmacy in their broadest conceptions.

Selective Service Tests

Major General Lewis B. Hershey, director of Selective Service, has announced the fifth series of Selective Service College Qualification Tests which are to be given on Thursday, December 9, 1954, and Thursday, April 21, 1955, at more than 900 testing centers.

Students whose academic year will end in January, 1955, have been urged to take the December test so they will have a test score on file at their local boards before the end of their academic year, at which time the boards will reopen and consider their cases to determine whether they should again be deferred as students.

To be eligible to apply for the tests a student must: (1) intend to request deferment as a student; (2) be satisfactorily pursuing a full-time course of instruction; (3) must not previously have taken the qualification test.

The present criteria for deferment as an undergraduate student are either a satisfactory score (70) on the qualification test or specified rank among the male members of the class (upper half of freshman class, upper two-thirds of sophomore class, or upper three-fourths of junior class).

Students accepted for admission to or in attendance at graduate school after July 1, 1951, satisfy the criteria if they ranked among the upper one-half of the male members of their senior class or made a score of 75 or better on the test. Graduate students admitted after January 1, 1955, must have ranked among the upper one-fourth of the male members of their senior class or make a score of 80 or better on the qualification test.

General Hershey has emphasized that local boards are not required to defer students meeting the criteria. Doing so merely makes a student eligible to be considered for a student deferment. If a local board refuses to defer a student meeting all criteria, he of course has the right to appeal his case.

Applicants for the tests should mail applications for the December 9, 1954, and the April 21, 1955, examinations to Science Research Associates, Chicago, Ill., in self-addressed envelopes which may be obtained at local boards. Applications for the December 9 test must be postmarked not later than midnight Tuedsay, November 23, 1954.

Dr. Pittenger Retires

THE recently announced retirement of Dr. Paul S. Pittinger, director of Quality Control and Vice-President of Sharp & Dohme, Division of Merck & Co., Inc., focuses attention on an exceptionally able and long service to the profession of Pharmacy by one who has played a major rôle in the development of biological and pharmaceutical products, and especially their standardization and quality control, for more than four decades.

Dr. Pittenger was a pioneer in bioassaying of pharmaceuticals. His early papers on the standardization of digitalis, pituitary preparations and other drugs incapable of being assayed adequately by chemical means, led the way to a new concept of the measurement of the quantitative action of drugs. He was the first to publish a manual and textbook on the subject of bioassaying.

Dr. Pittenger has been a regular attendant at meetings of the AMERICAN PHARMACEUTICAL ASSOCIATION for more than forty years, and has missed only two conventions since 1914. He served as First Vice-President of the ASSOCIATION in 1924–1925. During the same year, he was also Chairman of the Scientific Section of the ASSOCIATION, and from 1925 to 1928 he was its Secretary.

In addition to his outstanding work in the pharmaceutical industry, Dr. Pittenger also taught for about twenty years at the Medico-Chirurgical College of Philadelphia, the Philadelphia College of Pharmacy & Science, and the College of Pharmacy of Temple University. His course in bioassaying was the first to be offered in the United States. He is a graduate of the Medico-Chirurgical College of Philadelphia, receiving his undergraduate degree in pharmacy in 1909, and graduate degrees in 1910 and 1911. He also received the Master of Pharmacy degree, in course, from the Philadelphia College of Pharmacy & Science, and in 1940 the same institution conferred on him the honorary degree of Doctor of Science.

Dr. Pittenger has combined rare skill in devising apparatus for biological assay work and unique methods of packaging drugs for various methods of administration, with a broad knowledge of manufacturing and dispensing pharmacy, and has made many contributions to the advancement of the profession. He has been a wise counselor to the management of the corporation with which he has been associated, and he has helped to solve many a knotty problem both in the field of production and distribution of essential pharmaceuticals.

We honor him for his many contributions to the progress of the profession which he has served so long and so well, and we wish him a long period of pleasurable retirement.

Fair Trade Developments

RECENTLY, the Supreme Court of the United States refused to review New York State and New Jersey court decisions which upheld state fair trade acts. The Court did not give any legal opinion in connection with these actions.

However, denial by the Court of a review of cases in which the decisions on the nonsigner clause were favorable to fair trade represents a development which would seem to support the constitutionality of the fair trade statutes and should certainly act as an encouragement to the enforcement of fair trade contracts in states where the courts have so far expressed themselves favorably on these statutes or where no cases on the subject have been decided.

At the present time all but the following states have fair trade statutes: Missouri, Texas, Vermont, and the District of Columbia.

In the following states unfavorable court decisions have tended to nullify Fair Trade Acts: Arkansas, Florida, Michigan, Nebraska, Tennessee, and Utah. This situation points to the importance of continuous enforcement of the Fair Trade Acts in states where supreme courts have either supported these acts or have not expressed themselves in one way or another on their validity.

These are signs of greater public acceptance of the fair trade principle but they are counterbalanced by aggressive tactics on the part of merchandising organizations which rely almost exclusively upon predatory price-cutting for their business success. It is a situation which calls for continued vigilance and aggressive action against violators on the part of those who wish to maintain the public and private benefits of fair trade legislation.

The Impact Of Recent COURT DECISIONS On The Practice Of Pharmacy

by Joseph H. Stamler

I SHOULD like to discuss two cases which have been talked of as important decisions of interest to all levels of pharmacy: the manufacturer, the educator, the retailer.

The first decision is that of Hoffmann-La Roche *vs.* Schwegmann, which was tried in May of 1954, in the U. S. Court for the Eastern District of Louisiana. I do not propose to go into citation of cases. I want to tell you of the principles involved as they may affect you.

In this first case, there has been a misunderstanding on various levels of pharmacy as to what the case actually means. This was the situation: it involved a fair trade problem, but the case and the decision went further than that. After the passage of the McGuire Act, Eli Lilly & Company brought suit in New Orleans against Schwegmann. The constitutionality of the Louisiana Fair Trade Act and the McGuire Act was upheld. An injunction was issued against Schwegmann.

Thereafter, and upon invitation by Schwegmann, consumers approached their physicians with the request for prescriptions covering over-the-counter products. Further, Schwegmann also suggested in his advertisements that prescription products could be sold at whatever prices he pleased because the trademark brand and name of the manufacturer had been removed.

Suit was undertaken by Hoffmann-La Roche against Schwegmann to test the question of fair trade enforcement on prescription drugs. Among the findings of fact of interest to this body would be these. The products involved in the case were commodities supported by research, development, and scientific investigation, achieved only after great expenditure of time and money and thereafter manufactured under rigid controls, and they were then ready for the first time for distribution to doctors and pharmacists throughout the country.

It also found as a fact that the products involved in the case were not advertised directly to the lay public; that the products were promoted directly to the physicians and other licensed practitioners in the healing arts, including pharmacists and hospital personnel. So that we had squarely before the Court in that case the question of the removal of the trademark and whether the manufacturer's goodwill was affected and therefore subject to minimum resale price maintenance.

In his conclusions of law, Judge Wright said:

"When a purchaser requests an article by trade name, the seller undertakes to guarantee to the purchaser that what is delivered is the named product."

The Court went on to say that awareness by the customer of the name of the drug in his prescription is not an essential factor in determining whether or not the trade name of the manufacturer is utilized in selling a fair-traded product. The goodwill established in prescription drug trademarks, brands, and names is inseparably bound with prescriptions which physicians write for their patients.

In these conclusions we have two principles of law. Substitution and the sale at less than the minimum resale price are noted as unfair competition.

I cannot agree with those who think that substitution can be compared to petty smuggling or chiseling. It is a hideous crime. The petty smuggler who may bring in a little item by the customs, happily or unhappily, stands before his family as just a citizen who did a little petty larceny.

Those engaged in substitution of drugs and medicines are for the most part professional people. To me, this is a great crime.

I take great pride in my profession, and you each should take great pride in your profession.

An address delivered at the Second General Session of the Boston Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, August 26, 1954.

When you are entrusted with your professional licensure, you become in great measure entrusted with the health and the future of the people of the United States; and the strength and health of the people of the United States are determinative of the strength of the nation. The substituter is more than just the person who smuggles. Pharmacists are part and parcel of a profession dealing with our lives, just as much as the doctor is. Therefore, he who substitutes is guilty not of a custom tax evasion—but of a fraud imposed upon his professional brothers, the allied health professions, and the welfare and safety of our nation as a whole.

Trade Name Reference Suffices

Referring again to the Schwegmann-Hoffmann La Roche case, the court raised a series of questions during the trial as to whether the removal of the trademark or trade name at the time of sale would permit the pharmacist to sell at such price as he pleased. The court was satisfied that it is not essential that the product or container physically bear the trademark, labeled brand, or name of the manufacturer at the moment of delivery.

It is sufficient if the product is referred to in anyway by trade name. This case is as important to fair trade and to the continuation of fair trade as those cases which held that a trademarked, trade-named product which bore the physical evidences of the mark, brand, or name at the time of sale could not be sold at less than the minimum sale price. In this decision we see a definite curb to substitution. We can enforce, in prosecuting an action of unfair competition, both substitution and fair trade or minimum prices at the same time.

We know that the public has been confused, by seeing a $4 prescription product sold as a loss leader, as it actually was in the state of New Jersey at one time, for eleven cents. Certainly, the consumer returning to that store after the loss leader effect of the product has vanished, when charged $3.50 or $4 in that same store, cannot be told by the cut-rate operator that it was just used as bait; rather, the consumer is told that it is the result of increased manufacturing costs, or additional cost to the retailer.

However, I *do* want you to understand that this decision in no way is taken as fixing the pharmacist's professional fee. It does *not* do that.

Lawyers in many states are guided by established minimum fees except in the representation of indigent persons. Doctors, we know, either by agreement or by custom, have a minimum. This decision effectively establishes *the minimum price* at which the product must be sold. The maximum price has not been established. Perhaps custom sales among the consumers will establish such voluntary maximum price after a period of time but there is no court action which will enforce a *fixed* price. The Courts will only enjoin sales *at less than* the Fair Trade price.

The case of Hoffmann-La Roche against Schwegmann is not concerned with the non-trademarked field so long as the goodwill of the manufacturer in some way (by name or brand or otherwise) is used; and this is so even though the doctor's prescription, as it frequently is, is illegible to the consumer who carries it with him.

The case is on appeal to the Fifth Circuit Court. It may go to the United States Supreme Court.

The second case about which I would like to talk with you is that of The Proprietary Association *versus* the Board of Pharmacy of the State of New Jersey. That case was begun in August of 1951 by complaint filed by the Proprietary Association. It was a lengthy trial, many witnesses, medical witnesses, appearing on both sides. An adverse decision to pharmacy was handed down in June 1953. An appeal was taken by the Board and the trial court decision was reversed by the New Jersey Supreme Court by a six to one decision in June, 1954.

Suit Sought Definition

The New Jersey Statute governing pharmacy is an old one—1877, but there have been many amendments. The Proprietary Association, who represented themselves to be a membership which controlled 90 per cent of all completely compounded drugs and packaged medicines in the United States, sought a court definition of an exemption in the statute which permitted the sale of non-poisonous patent or proprietary medicines or domestic remedies out of the presence of a licensed pharmacist.

The New Jersey Act requires all drugs and medicines, except those within the exemption I have just referred to, to be sold under the personal supervision of the registered pharmacist.

Now, I could not do better for you than to read directly from the court's opinion—the Supreme Court's opinion. The Supreme Court said that the Proprietary Association in this case did not choose to seek an adjudication with respect to any particular item or any particular drug. On the contrary, they simply prayed that the court

define the meaning of the patent medicine and proprietary medicine, and they sought, and the trial court granted, a definition so sweepingly broad as to embrace all drugs and medicines sold directly to the general public so long as they are compounded and packaged in original containers which bear specifications of their purposes and directions for their use under the private labels of their manufacturer.

Now, the court went on to say that it is hardly conceivable that any legislative purpose could so be gleaned from the statutory exemptions as to open it to every drug and medicine which had its direction for use and its name thereon.

During the trial of the case when four or five doctors appeared for the Proprietary Association and four or five doctors appeared for the Board of Pharmacy on the same question and answered the same question, the Proprietary Association's doctors answered yes, and our doctors answered no. Then, when we went back and handed them the products in question, they did not know in their own mind whether they were so-called patent or proprietary medicines. They had no definition to propound, other than the one for which they had been called or the side they had been called to uphold.

There was, however, in the testimony a complete diversity of positions taken by the Board of Pharmacy and the Proprietary Association. The Proprietary Association had taken a position that no skill or science in any manner was called for on the part of the seller of these packaged drugs and medicines; that anyone could make the sale so long as he could read the label on the package and make changes for the purchaser; and that the articles in question could be sold by a grocer or dry goods merchant as well as by a pharmacist.

Pharmacists Better Qualified

The Board of Pharmacy contended that the sale of all drugs, including drugs in original containers, should be confined to pharmacists and should be dispensed by a licensed group. All pharmacists have formal education and training and are obliged to meet minimum standards, not only with respect to their educational training but also with respect to their drug stores, and are equipped to identify the ingredients of drugs, to answer appropriate inquiries, and to furnish cautionary information and advice. They contrasted this with the ordinary retail tradesman who need have no formal training or education and who might not be equipped to read or understand labels on package drugs which may contain special instructions for their keeping, or expiration dates, or the listing of ingredients under unfamiliar terminology.

Lack of Supervision Cited

It was quite a shock, as I stood before the Supreme Court, arguing this case upholding the contention of the Board, when one of our Justices said, "Mr. Stamler, I have been going to my drug store to buy drugs for three years now and I have yet to see the pharmacist. In each instance, I have been waited upon by the girl behind the cosmetic or tobacco counter."

In the Trial Division, the trial court judge judicially noted that he could go in, pick up aspirin or A.P.C. or some such product from the counter, place down the right amount, and walk out with the package without seeing anyone. However, we feel, and we continue to feel in New Jersey (and at least the Supreme Court has upheld us) that these instances—and we would like to consider them isolated—of lack of supervision do not mean that a law lacks a useful purpose.

The court acknowledged in some cases that no technical skill may be required in making the sale. They go on to point out that the pharmacist knows where to procure the genuine article. The articles are all manufactured under rigid FDA controls now and every article that the consumer might get is a genuine article. The court then went on to say that the examination of the quality of the medicine is not the sole purpose of the pharmacist; and this, I think, is very important to you pharmacists. If the pharmacist knowingly sells an adulterated or harmful preparation, we do not believe he would be protected by the fact that it was sold in the original package.

The Supreme Court went one step further, stating that the pharmacist is equipped by training and education to know and advise prospective purchasers what products contain vitamins they seek in the best combinations. The record shows that many of the vitamins lose their strength and vitality by exposure to light or adverse temperatures. The pharmacist is equipped by training to know how best to preserve the beneficial qualities of these products.

However, the wisdom and propriety of confining the sale, all courts agree, should not be left to a judicial determination. It is appropriate for legislative bodies to make that determination.

The court should concern themselves only with the constitutionality of a statute. The

courts today are faced throughout the United States with similar attacks upon pharmacy legislation. Although we have in New Jersey an 1877 Act, there are acts that come before the 1900 period and some run up into the 1930's without any definition of any exemption. I don't think that the exemption is necessary.

The court here in the New Jersey case suggests that the Legislature make an appraisal as to whether a definition should be placed in the statute, such as appears in modern legislation. For example, the Food, Drug and Cosmetic Act begins by defining what a drug is, what a medicine is, and so forth. Modern legislation may require definitions. But would a definition of an exemption such as this dispose of the problem when we recognize today that products thought harmless a few years ago now are known by medical research to be poisonous. Products which years ago were considered to be poisonous are now known to be beneficial and, in some degree, harmless to the system. However, we must recognize that there is no drug with therapeutic value that is completely harmless to all people.

In this case, much more disturbing to me than the contradictory testimony was the lack of understanding on both sides of the case, both on the retail professional level and on the manufacturing professional level. The manufacturers lacked a long-range view of the complete destruction of beneficial products due to self-degradation in supermarkets and in delicatessens and tobacco stores. It was a self-emasculation of a product by relying solely upon TV or radio to sell the product, with no control whatsoever. There the product sits in the supermarket for the consumer to pick up, or the child of the consumer to pick up and eat on or off the premises or put into the shopping basket.

Equally disturbing to me was a lack of understanding on the part of the retailer of his professional duties and obligations, of ethics in the sale of drugs and medicines. Is he neglecting his rôle of a professional person?

Far more disturbing, however, was a complete lack of mutuality on all levels. The retailers in the case were of two minds. There are pharmacists throughout the United States who are pressing for self-service, and who by that action are encouraging sales in delicatessens, supermarket style. These retail pharmacists cared not whether the case was won or lost.

There were two groups among the patent medicine men. We received assurances from members of the very association which brought the action that they were not in favor of the action and would like to see us succeed, but they "had to go along." Then, of course, there were those who prosecuted the litigation and felt that all one has to do is make change to make a sale.

In the ethical manufacturer group there were two schools of thought during the trial of the case. There were those who furnished us with scientific assistance, with documentation that enabled us to make a good record for the Appellate Court. There were others who would have liked to have seen the patent medicines wide open to the supermarkets because they felt that then the retail pharmacists would encourage the sale of the ethical proprietaries to a greater extent than the advertised products.

So that in these groups, among themselves where there should have been a cohesive force, where there should have been joint thinking, there was a complete breakdown.

I know that you have had under consideration uniform legislation in pharmacy statutes. I think that it cannot succeed because of the differences in the nature of the various states, the industrial states as opposed to the farm states, the North as opposed to the South—all different types of problems arise. But there is no reason why there could not be model legislation from which each state association could feed and live and draw up a model statute to suit their individual needs. To do this, a complete understanding on all levels is needed.

I think that it is time right now, in view of this decision and in view of the attacks which are now made in the Northwest upon pharmacy and pharmacy statutes, to arrive at a common meeting ground for the best interests of the pharmaceutical profession and people of the United States generally. That can only be done by meeting together on all the levels—education, manufacturing, wholesale, retail—and ironing out this problem so that pharmacy can continue to exist as a profession.

Florida Pharmacy Act Interpreted

Since pharmacists and retail drug establishments are prohibited by the Florida Pharmacy Act from selling or giving filled prescriptions to persons other than the one by whom they are intended to be used, they are thus prohibited from furnishing compounded drugs for resale by sundry stores which take prescriptions from physicians, and send them to a drug store where they are filled, returned, and then sold to the public as though they had been compounded by a druggist on duty in the sundry store. The Pharmacy Board is authorized under the Act to stop this activity by injunction.

THE SIGNIFICANCE OF PROFESSIONAL ECONOMICS • • TO THE PRACTICING PHARMACIST

by Seymour B. Jeffries*

THE ECONOMIC and social forces currently at work in the pharmaceutical field are sure to make 1954 a milestone year in the annals of modern Pharmacy. Traditional patterns of brand-name medicinal and proprietary production, marketing, and distribution are under attack. Long overdue changes in professional education are taking place all around us; the five-year Pharmacy course is a certainty. Economic and sociological concepts dealing with public health and medical care are being critically revaluated in terms of the needs of a better informed, a growing and aging population. The cumulative effect of "modern medical specialty" drug therapy on: (1) the traditional entrepreneurial rôle of the pharmacist, (2) retail prescription practices and (3) the pharmacist's qualitative value to the community, is being studied and assessed not only by Pharmacy and the medical professions but by the public as well.

The full impact of these forces on retail professional pharmacy is reflected in the emergence of such acute ethico-economic problems as substitution, duplication, and the development and promotion of the generic-name concept of prescription writing and dispensing.

Professional competition from industrial, union, and group medical plans offering prescription services to their members and subscribers is on the increase and poses a serious threat to the "free enterprise" framework of American retail Pharmacy. In addition, numerous physician-owned clinics, complete with prescription dispensing facilities are springing up in every part of the country and threatening to cut still further into the professional practice of local drug stores.

In the Middle West, the Far West and in the southern states, reports show that local clinic activities have cut prescription volume by as much as 50 per cent in some cities. A clinic is forming in Nassau-Suffolk. More and more local (metropolitan New York City) unions are demanding prescription service, oxygen and ambulance services as fringe benefits on contract negotiations. All of which means a reduction of total prescription volume available to private pharmacy. The Veterans Administration too is cutting down its "home town" prescription program.

Another very important economic problem facing modern pharmacy is the growing sensitivity of the public to the high cost of medical care. Unfortunately, the adverse consumer reaction to "high" medical care costs blankets pharmacy too. A recent consumer study of medicine costs revealed that more than 63 per cent of the respondents felt that prescription prices were higher than they should be; and more than 65 per cent blamed high prices on: (1) "high profit-taking by druggists," and (2) "pricing guesswork."

This kind of thinking on the part of the public plus the name calling and blame passing by manufacturers' representatives and physicians, both of whom are either misinformed or uninformed about the practical problems of prescription costing and pricing, tends to make the pharmacist's job "at-point-of-℞" exceedingly touchy and difficult. It is easy to understand, with this kind of misinformation about professional Pharmacy being bandied about, how an irritated, suspicious public might fall for the socialized pharmacy propaganda line being peddled by left wing groups.

Actually, the high cost of medicine is not high at all. In fact, the per capita consumption of drugs and medicines is slightly less than $10. Compare this with the annual per capita consumption of $57 for alcoholic beverages and $36 for tobacco products. The truth is that the public is purchasing health and life at a phenomenally low figure—at bargain rates—but is not aware of the facts.

"High profit-taking" too is just so much propaganda that makes for sensational newspaper and magazine copy. Quoting from a recent *Lilly Digest*, 62 per cent of drug stores in cities

Part one of a two-part article.

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of 500,000-plus population showed profits of zero to 4 per cent; 23 per cent of all drug stores reporting showed profits of zero to 2 per cent of sales; and almost half of the average-volume drug stores earned from less than 1 per cent up to 4 per cent net profit. The facts show pretty clearly that pharmacists are not rolling in wealth.

Obviously, the pharmacist is on the hook. Hemmed in by external pressures in the form of consumer "price" prejudices and beliefs and mounting operational costs, he has to make adjustments, but they have to be exceedingly slow coming. Certainly he is in no position to keep the lid on wage costs without going back to the dark ages of the 70- or 80-hour week.

Compounding on the Wane

To see these economic problems in their proper perspective and to better appreciate their significance to us as practicing pharmacists, we must understand that most of them did not emerge as full blown, recognizable problems until prescription practice had, as the result of the impact of powerful social and economic forces, become predominantly a matter of dispensing prefabricated, name-brand medical specialties. At which time, as a practical matter, the techniques of business and commerce applied to prescription dispensing became as important to professional success as pharmaceutical knowledge and traditional craftsmanship We may not like the way this sounds, but those are the facts.

With pharmaceutical manufacturing facilities expanding in every direction to meet the increased medical care needs of a growing, aging, and more health-conscious population, with increased medical and pharmaceutical research, with the establishment of higher and more effective standards, with the development and acceptance of more complex forms of medication—way beyond the capacity of the prescription room, and finally, with the increased use of modern marketing and advertising techniques to stimulate ethical, physician and consumer demand for brand-name, factory fabricated medical specialties and proprietaries, the reduction of prescription practice from a professional craft to the common denominator of brand-name, prefabricated medical specialty dispensing was inevitable. A late nationwide prescription practice survey revealed that in 1953 an average of less than 10 per cent of the prescriptions dispensed were compounded; in some states the percentage of compounded prescriptions ran below 3 per cent. It is not at all unlikely that within five years, medical specialty dispensing will completely dominate prescription practice.

This change-over in prescription practice from a craft to "specialty" dispensing not only subjected pharmacy to a variety of, shall we say, "new" economic and social pressures; it also brought about a change in the pharmacist's value and contribution to the community. From a professional craftsman whose knowledge and professional skill were needed to fabricate medication for the public, he gradually assumed a new role with a new value—that of professionally trained and licensed distributor of factory made medication.

This is not to say that we ought to stop the clock, or turn it back to the "good old days." Obviously, the "Golden Age" of the medical specialty is here to stay. Medicine is thriving on it, and so is the public. Nor is there any reason to believe that Pharmacy is through as a "profession," or that the pharmacist's new value, or his new contributions to the over-all health and welfare of his community, is lessened thereby. Quite the contrary. With the increasing complexity and potency of modern medication, and with the changing pattern of medical treatment and drug therapy, the need for more comprehensive and exacting professional knowledge and experience in the supervision of the distribution link between the patient and the physician is greater than ever before. In fact, there is no question but that the practicing physician will eventually have to rely more and more heavily on the pharmacist's highly specialized knowledge of pharmacology and chemistry, dosages, side-reactions, therapeutic characteristics, incompatibilities, etc., to help him maintain the very highest standards of (patient) "safety" whenever he prescribes any kind of drug or medicine in the treatment of his patient.

Influence of External Factors

While a large part of Pharmacy's professional practices problems would be (and are likely to be) *solved by the development and application of sound operational techniques and controls*, Pharmacy in the broader economic sense remains quite vulnerable insofar as "total retail prescription volume" is concerned. In the main, total prescription volume is affected by external factors over which we have little direct control, but which—if we work hard enough at it—we may influence. Of course, one pharmacy in a local area may get the bulk of the *available* prescription volume if it employs certain competitive business techniques, but this simply

means that the other drug stores get less. On the other hand, when external professional competition develops, such as physician-owned clinics, group medical plans with prescription provisions, union-controlled health centers with prescription facilities, the total number of prescriptions available to retail drug stores is affected directly. Total number of prescriptions available is also affected by changes and developments of the prescription writing practices and habits of physicians in the area. Obviously, any factor that influences the physician is important to us.

Of all the external factors operating to inhibit the growth of total prescription volume, "high medical care costs" propaganda is, to reiterate, perhaps the most serious. Born and bred in an era of excessive governmental paternalism, it encourages and stimulates the growth of socialistic or "extra-curricular" professional competition. And to the extent that it sensitizes the physician to the half-real, half-fanciful cost complaints of the public, it tends to affect his prescription writing patterns, inhibiting and frequently discouraging prescription writing, and stimulating him to discuss medication costs with his patients, in addition to circumscribing the nature of the medication he will write for.

Counter Measures, Necessary

Obviously, a counterpropaganda program to relieve Pharmacy of the distressing "prescription volume development" and "price prejudice" pressures, in addition to counteracting the growing volume of socialized medical care propaganda, must be launched at once. The call for this type of activity has been made so frequently that it is more or less bromidic—the inactivity of organized pharmacy is also bromidic. The public must be sold, at any cost, on the tremendous bargain it is now receiving from retail pharmacy. We must prove to the public that the prescriptions we dispense are a tremendous buy at any price and by any standard, and that the contributions of the pharmacist are invaluable to the community.

Duplication, substitution, and the generic-name and ARB prescription writing and dispensing concepts are ethico-economic problems which, as has been pointed out many times before, emerged as serious operational problems when prescription practice became predominantly a matter of medical specialty dispensing.

Substitution, and I am sure that the word needs no further explanation, has been termed and treated as an ethical problem. And it is. Yet its roots are economic; obviously it could only exist as a problem in an age of medical specialty dispensing. It is a practice that goes to the heart of the brand-name, ethical marketing structure, undermining the manufacturer's trade-name, product goodwill, and his sales. From the retailer's point of view, it is an unethical, plainly fraudulent practice that yields illicit profits, involving, as it does, the substitution of less expensive (and sometimes inferior) imitations of the genuine product.

In addition to raising a serious question of professional and inter-professional ethics, the practice of substitution irritates the already sensitive public-relations "high medical care cost" situation by creating a complex prescription price competition problem among drug stores operating in any particular area. When substitution is employed as a competitive weapon by a so-called "sharp" operator, *legitimate pricing* based on the costs including the wholesale price of the "original or genuine" product becomes impossible. Unfair price differentials are set up which (more often than not) cannot be satisfactorily explained to the lay public or the prescribing physician. It breeds distrust, intra- and inter-professionally, and among consumers.

The ugly fact is that certain unscrupulous pharmacists practice substitution for extra financial gain in good times and tend to become even worse offenders in times of economic stress—advancing the very tenuous argument of "economic necessity" as justification. There can be no justification for such a patently dishonest and unprofessionally fraudulent practice on any grounds, including economic necessity, regardless of degree of form. A telephone call to the physician requesting permission to switch brands is the only honest thing to do if "economic necessity" is pressing.

How to Combat Substitution

Substantively an ethical problem, the practice of substitution can, I am sure, be dealt with adequately by: (1) working toward a better and more universal understanding of professional ethics, responsibilities and disciplines, (2) constantly improving standards of professional education, and (3) developing a more comprehensive self-policing program within the retail pharmacy structure.

Duplication of drug products, the production and marketing of brand-name drugs and specialties already in production and widely marketed—by a competing manufacturer—for

the purpose of building sales, bolstering sales and/or maintaining a competitive market position, is characteristic of the present ethical marketing structure of the pharmaceutical industry. Last year, 517 prescription pharmaceutical products were introduced, of which less than 10 per cent were actually new, the rest being "oldies" in new dosages, new forms, new potencies, "new" combinations with established drugs, and some with slight formula changes and new names.

While drug store sales and dollar profits were high and climbing, an increase in capital investment and increased capital maintenance costs for prescription inventory was not particularly serious. (And this applies to high volume professional type pharmacies today.) But when, as in the last few years, the over-all growth rate of prescription volume began to fall off sharply, and when both storewide as well as professional profits began shrinking, the continued shift of capital and earnings into duplicate prescription items became a critical matter.

Of course, no one will deny that the marketing and detailing of genuinely new drugs and medicines do help stimulate the growth of total retail prescription volume. But it has been demonstrated time and again that the *unrestrained* marketing of duplicates and imitations of both new and established products by the major, as well as the fringe, producers adds very little, if anything, to the total retail prescription volume, while at the same time adding to the already heavy operational burden of the "average" prescription volume drug store. More specifically, here is what can, and often does, happen: (1) inventory levels and inventory maintenance costs increase; (2) profits and profit potentials are cut down and returns on capital invested in prescription merchandise reduced considerably. Obivously, if more and more money is needed to do roughly the same amount of business, or if the rate of increase in prescription inventory, dollarwise, keeps pace with the increase in prescription dollar volume, the situation could hardly be termed "healthy."

However, let me say in all fairness that the pharmacist himself is partially responsible for a good part of the internal operational difficulties created by duplications and imitations. I will explain this observation more fully a little later.

There is no way for the retail druggist to extrinsically control the marketing of duplications and imitations within the framework of American free enterprise. The manufacturer is in business to earn profits from the sale of drugs—be they duplicates, imitations, or genuinely new products. Since the druggist may move "legend" drugs only on order from a physician (or any other authorized person), the manufacturer first directs his heaviest advertising and detailing efforts toward the physician. His sole purpose is to sell the physician on his particular brand-name original or duplicate item. Once the physician writes for the duplicate brand-name item, the pharmacist is expected to go right along and add it to his already substantial inventory of brand-name copies of the very same generic drug.

If enough advertising and detailing pressure is built up, and the product is very popular (that is, the generic drug), the duplicate will move. But experience has proved, unfortunately, that roughly 65 per cent of the products marketed, including even the genuinely new drug items, are likely to be "busts," ending up as partially consumed "dead" junk on the pharmacist's shelves.

A careful and extensive audit-analysis of the prescription department purchase, sales, and inventory records of 28 carefully selected and representative pharmacies was made in New York City, New Jersey, Connecticut, and Nassau-Suffolk Counties of New York State to determine: (1) the number of new and duplicate drug items purchased over a 12-month period; (2) the movement and reordering of these items; (3) the mortality figures on this group of drug items; (4) the average and medium price of these items (wholesale); (5) the percentage of "investment-recovery" on those items classified as "slow-pokes" or "dead." (*The project on the "Economic Effects of Duplication in the Retail Pharmacy" was started in September, 1953, under the supervision of Prof. S. B. Jeffries of the Brooklyn College of Pharmacy, assisted by Prof. I. Greenberg.*) The sample included drug stores in four dollar volume classifications—among which were "traditional," "promotional," and "prescription" type operations.

Survey Results

The study, to date, reveals the following information:

1. The average pharmacy purchased from 230 to 285 "new" and "duplicate" prescription items over a period of 12 months.
2. The median price of these added items is $3.35. They range from lows of $0.40 to $0.50, to highs of $11.00 and $12.00 based on wholesale figures for normal quantity

purchases. Quantity and direct purchase prices were lower. However, the number of new items and duplications purchased originally in quantity or directly in large quantity was not significant insofar as the "slow-pokes" or "dead" items were concerned.

3. Approximately 25 per cent of the 230 to 285 items purchased during the 12-month period moved with a frequency of two to two-and-one-half turnovers per annum—based on normal wholesale purchase quantities (hundreds for tablets, capsules, pills, etc.).
4. The next 10 to 15 per cent became the "slow-pokes" (turnover of 1.5 or less per annum), and the remaining 60 to 65 per cent "died" on the shelves (inactive after the first prescription and completely inactive-and-unopened packages).
5. At least 30 to 50 per cent of the wholesale cost of the "slow-poke" prescription items (repurchased after original order) was recovered by practically all of the pharmacies audited. Approximately 30 per cent of the wholesale cost of the "dead" items was recovered, and 100 per cent recovery on unopened packages was usual where credit was requested in exchange for unbroken packages.
6. In 40 per cent of the drug stores audited, pharmacists were recovering 100 per cent of the wholesale cost of the item on the first prescription as a matter of policy—circumstances permitting.
7. The percentage of products that develop into "normal" turnover brands appears to vary directly with the volume of prescriptions filled by the drug store per diem. In the "low" prescription volume drug stores (1 to 10 prescriptions per diem), the percentage of "dead" items (opened-and-inactive and unbroken packages) ran as high as 78 per cent.

Thus, on an annual purchase figure of approximately $900 for "new" and duplicate drug items, the average pharmacy ran up a product mortality *total of between $450 and $500*—taking into consideration the total and partial inventory cost recoveries mentioned in (5) and (6) above. This average mortality figure of $450 to $500 per annum varied from store to store, depending on how efficiently the pharmacist was managing his prescription department—with particular emphasis on buying, inventory control and prescription volume.

It should be noted, however, that the *$450* to *$500 mortality figure is exclusive of the cost of normal product obsolescence which experience shows runs approximately 1 per cent of total prescription dollar volume in the "middle" volume drug stores ($40,000 to $80,000 sales per annum); slightly lower in the high prescription dollar volume stores and somewhat higher in the low prescription dollar volume stores.* The weighted average prescription obsolescence cost in the 28 stores audited ran approximately $165 per annum. This figure included "popular" products, the last purchase of which was made within the twelve months preceding the audit date, and which showed no activity for the last nine months. Total annual inventory mortality costs, then, averaged approximately $615 to $665—including the cost of duplicate product purchases, "new" product purchases, and normal product obsolescence costs.

To drug stores in the middle sales volume bracket ($40,000 to $80,000) and whose profit-to-sales ratio runs from 1 per cent to 4 per cent, this is a very *significant* figure since it is, for all practical purposes, an out-of-pocket type of capital cost the average druggist can ill afford. To the low sales volume type of drug store, such a figure is *critical*. High sales volume and high prescription dollar volume drug stores are obviously in a better position to deal with this "cost of doing business."

It is interesting to note that on a conservative projected basis, the annual "product mortality" cost due to inefficient duplication marketing practices, inefficient duplication and inventory controls in retail practice, and normal product obsolescence runs between $15 and $18 million.

Obviously, product duplication presents a real problem. It is not, however, the horrible evil it is made out to be—particularly since it is soluble, so far as the manufacturer or the retail pharmacist is concerned. Over the past ten years many plans have been proposed for solving or mitigating the problem and effects of product duplication. It would be pointless and profitless to enumerate all of them now. Suffice it to say that sound duplicate product marketing policy and control of the effects of duplication on the retail level can be achieved by: (1) mutual understanding of the problem and (2) across-the-board cooperation by all the segments of Pharmacy involved—each operating within its own sphere of activity to contribute to the common good.

[Concluded in the December Issue]

Just Off the Press

THE MANUAL OF ANTIBIOTICS 1954-1955

Prepared Under the Editorial Direction of
HENRY WELCH, PH.D.

For the first time, there are gathered between the covers of one book a list of the preparations, therapeutic index, generic and trade names, and names and addresses of producers of all existing antibiotics and their preparations.

This information, prepared under the editorial direction of Henry Welch, Ph.D., and published by the Medical Encyclopedia, Inc., is distributed exclusively by the American Pharmaceutical Association.

Practicing pharmacists will welcome this authoritative list of antibiotics and their products, complete as of the date of publication. It provides the list of antibiotics in alphabetical order with the active ingredients, the trade names, the indications and the names of the producers.

For ready reference there is an index of trade names in this field, an index of generic terms applied to antibiotics, and an index of the manufacturers of these products, giving the name of the firm and the address.

The American Pharmaceutical Association is pleased to make this manual available for general distribution as a service to the pharmaceutical and medical professions and to the drug industry.

The price of the manual is $2.50, and a discount of 20 per cent is allowed members of the American Pharmaceutical Association in good standing. All orders must be accompanied by check or money order.

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A SYMPOSIUM on ANTIBIOTICS

• • AT THE 1954 Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION, the Section on Practical Pharmacy was joined by the American College of Apothecaries and the American Society of Hospital Pharmacists in a special session which featured the papers summarized on this page and printed in full on the succeeding pages.

In the closing days of last month the Second Annual Symposium on Antibiotics, sponsored by the U. S. Department of Health, Education, and Welfare, Food and Drug Administration, Division of Antibiotics, was held in Washington, D. C. Its chairman was Dr. Henry Welch, who heads F.D.A.'S Antibiotics Division and edits *Antibiotics & Chemotherapy*, in which these papers are to be published.

Antibiotic Formulations

BY FRANK H. BUCKWALTER

Several hundred antibiotics have been reported to date. This paper, however, confines itself to a description of those antibiotics which are commercially available at this time for the treatment of human diseases and ailments. They are: penicillin, streptomycin and dihydrostreptomycin, tyrothricin or gramicidin, bacitracin, Aureomycin, Terramycin, neomycin, polymyxin, Chloromycetin, erythromycin, carbomycin, viomycin, fumagillin, and the newest antibiotic, tetracycline.

Much information concerning physical and chemical properties of the antibiotics and data useful in the formulation of dosage forms is included.

Clinical Applications of Antibiotics

BY LEWIS W. KANE, M. D.

The past decade has witnessed many miracles in the field of antibiotic therapy, but much still remains to be done. More effective agents are needed, for example, in the therapy of tuberculosis and enteric diseases. Unanticipated problems have arisen, too, such as the development of bacterial resistance, superinfections and severe anaphylactic reactions to penicillin. It will be no easy task to find new antibiotics to displace those now entrenched, but the progress made to date gives promise of many more exciting discoveries.

Antibiotics in the Hospital Pharmacy

BY WILLIAM E. HASSAN, JR.

Antibiotics, principally in the form of injectables, represented 30.1 per cent of the total estimated drug and chemical purchases made by general hospitals during the fiscal year beginning April, 1953.

Most institutions purchase only one brand regardless of how many are prescribed, but in the broad spectrum group there is usually greater choice.

Antibiotics in the Retail Pharmacy

BY JOHN J. DUGAN

So numerous are the technical factors involved in the preparation of most antibiotic dosage forms that compounding is limited largely to specialized groups of drug manufacturers. There are situations, nevertheless, in which dosage forms or combinations of antibiotics are prescribed that are not available from the manufacturer. It is with such situations that the author deals.

Antibiotic FORMULATIONS

BY FRANK H. BUCKWALTER*

THE SUBJECT "Antibiotic Formulations" is of tremendous scope, but we trust that in this brief paper you will find many helpful and useful items of interest. Several hundred antibiotics have been reported and described in the literature. We will confine ourselves to those antibiotics which are commercially available at this time. These are penicillin, streptomycin and dihydrostreptomycin, tyrothricin or gramicidin, bacitracin, Aureomycin, Terramycin, neomycin, polymyxin, Chloromycetin, erythromycin, carbomycin, viomycin, fumagillin, and the newest antibiotic, tetracycline.

Although many of the antibiotics have been and are widely used in the veterinary field, the field of feed supplements and the field of plant diseases, we will confine this paper to the human field.

A considerable amount of the information we will give to you has been obtained at Bristol Laboratories Inc. and some has been obtained from the literature. It is hoped the various properties given will be of real assistance to you in your compounding and formulation work.

Tetracycline—Tetracycline is the newest of the broad spectrum antibiotics. It differs from chlortetracycline (Aureomycin) by a chlorine atom and from oxytetracycline (Terramycin) by an OH group. Tetracycline can be obtained chemically by the dechlorination of Aureomycin and by fermentation.

Tetracycline is more soluble, more stable, and less toxic than Aureomycin and Terramycin. It shows a lower incidence of nausea, vomiting, and diarrhea.

Tetracycline is marketed as Polycycline by Bristol Laboratories Inc., as Achromycin by the Lederle Laboratories, and as Tetracyn by J. B. Roerig & Company.

Tetracycline is amphoteric with two acidic and one basic group and forms salts with acids and bases. Tetracycline base is hydrated or anhydrous. It is a yellow crystalline powder with a solubility in water of about 0.1 per cent. The base is more soluble in water than the bases of Aureomycin and Terramycin.

Tetracycline·HCl is a bright yellow, crystalline, odorless compound readily soluble in water. An aqueous solution of the hydrochloride is more stable than similar solutions of Aureomycin and Terramycin, showing the least loss of activity after boiling for 15 minutes.

For capsules tetracycline is compatible with lactose, magnesium stearate, talc, monocalcium phosphate, potassium dihydrogen phosphate, kaolin, ascorbic acid, sugar, stearic acid, calcium carbonate, and sodium bisulfite.

For tablets tetracycline is compatible with lactose, magnesium stearate, monocalcium phosphate, dicalcium phosphate, starch, sodium citrate, acacia, talc, white wax, and carnauba wax.

For oral powders to be reconstituted with water, tetracycline is compatible with soluble saccharin, insoluble saccharin, cocoa, sugar, acacia, methylcellulose, carboxymethylcellulose, vanillin, and various flavors and dyes.

A stable suspension of tetracycline·HCl for oral use is now available under the name of Polycycline Suspension "250."

Penicillin.—Penicillin is a strong acid. The acid form is relatively insoluble in water and soluble in most organic solvents. Penicillin forms salts with inorganic and organic bases and also various esters and anhydrides, a number of which have been described in the literature.

Sodium and potassium penicillin G are pure chemical compounds with a definite chemical structure and recognized in the U. S. P. as such. These two salts are crystalline compounds with little odor and a very bitter taste. They are hygroscopic, very soluble in water, and relatively insoluble in most organic solvents. Penicillin is thermolabile with maximal stability in the dry state and minimal stability in solution. It is decomposed by prolonged exposure to temperatures of 100°. However, it will stand heating at this temperature for at least four days. The presence of moisture accelerates decomposition. It is not affected by air or light. If the moisture content is relatively low (less than 0.5 to 1 per cent) the

* Research Division, Bristol Laboratories Inc., Syracuse, New York.

Presented at the Symposium on Antibiotics, Section on Practical Pharmacy, A.PH.A. Convention, Boston, Mass., August, 1954.

dry salt will be stable for at least three years at room temperature and for many months at elevated temperatures of 37° and 56°.

Sodium and potassium penicillin G are unstable in aqueous solution. They deteriorate very rapidly at room temperature but can be kept for several days under refrigeration. Deterioration is greatly affected by *p*H, temperature, concentration, and the presence of other substances. The optimum *p*H range for aqueous solutions is 6.0 to 6.5. The deterioration is more rapid on the alkaline side than it is on the acid side. Buffer substances such as sodium citrate and some sodium and potassium phosphates will materially help to lessen the decomposition in aqueous solution. These salts are stable for one to two weeks at room temperature and two to three weeks under refrigeration. Aqueous solutions are also stabilized to some degree by the addition of methenamine and ethylenediamine tetraacetate. Aqueous solutions are rapidly inactivated by acids, alkalies, alcohols, glycerin, and glycols; by traces of heavy metals such as mercury, copper, lead, and zinc; and by cysteine, zinc peroxide, hydrogen peroxide, and certain enzymes such as clarase and penicillinase.

Penicillin is compatible for a few days with many antiseptic solutions providing *p*H is controlled and no heavy ionic metals are present. Penicillin is compatible with thymol, eucalyptol, methyl salicylate, benemid, dehydrocholates, sulfamylon, silicone fluids, heparin, organic arsenicals and alkaloidal salts of atropine and epinephrine. The *p*H must be controlled. For example, U. S. P. solution of epinephrine is quite acid and would destroy penicillin unless buffered.

An isotonic solution with a 0.56° freezing point depression contains 77,000 units per cc.

Procaine penicillin G is a white crystalline compound with very little odor and a somewhat bitter taste. It is soluble in water to the extent of about 0.5 per cent. In the dry state it is quite stable for at least three years at room temperature and many months at 37° and 56°. It cannot be heated in the dry state much above 60° without decomposition. In this respect sodium and potassium penicillin are more stable than procaine. However, procaine penicillin is much more stable in aqueous suspension, in which it is good for two years under refrigeration. The solubility of procaine penicillin in water can be decreased from about 5 mg. per cc. to about 1.5 mg. per cc. by the use of 2 per cent of procaine·HCl. This increases the stability of the aqueous procaine penicillin suspension and enables it to be kept at room temperature for one year without significant loss in activity. Citrate and phosphate buffers slightly decrease the solubility and help the stability to some extent.

Benzathine penicillin G is a white crystalline salt with no odor and it is virtually tasteless. It is only soluble in water to the extent of about 0.01 per cent. The dry powder is quite stable for long periods of time even at the elevated temperatures of 37° and 56°. Aqueous suspensions for parenteral or oral use are also stable for long periods of time even at 37°. The aqueous suspension given by the intramuscular route gives very low blood levels for seven to ten days. Orally this salt gives blood levels of only about 30 per cent of the magnitude of sodium or potassium penicillin G and it does not last especially longer in the blood stream.

Tablets and troches containing most of the various penicillin salts can be made with various ingredients such as starch, talc, magnesium stearate, sodium bicarbonate, calcium carbonate, magnesium trisilicate, calcium stearate, aluminum stearate, lactose, benzocaine, all of the sulfa drugs, salicylamide, sodium gentisate, acetyl-*p*-aminophenol, phenacetin, caffeine, codeine, sugar, most of the antihistamines, various dyes such as FDC Red #1, FDC Red #3, FDC Yellow #1, and FDC Yellow #5, and many flavoring agents such as oil of peppermint, oil of lemon, oil of spearmint, anethole, and cherry. Soluble effervescent tablets of sodium or potassium penicillin also are made with anhydrous citric acid, sodium bicarbonate, and sodium benzoate. If the moisture content of products containing the above is kept low, the products are stable for at least three years at room temperature and many months at summer temperatures. By special process it is possible to make tablets containing procaine penicillin, aspirin, phenacetin, caffeine, and an antihistamine.

In the preparation of powders or granules for oral use containing sodium, potassium and procaine penicillin one can use soluble and insoluble saccharin; sucaryl; sugar; buffers such as citrates, phosphates, and aluminum hydroxide; all of the sulfa drugs regularly available; thickening agents such as gum acacia, gum tragacanth, carboxymethylcellulose, and pectin; preservatives such as sodium benzoate and the parabens; cocoa; kaolin; bismuth subcarbonate; benemid; caffeine; phenacetin; sodium salicylate; sodium gentisate; salicylamide; acetyl-*p*-aminophenol; codeine; many of the other antibiotics; dyes such as FDC Red #2, FDC Red #4, FDC Green #2, and FDC Yellow #5; flavors such as oil of orange, vanillin, anethole, oil of spearmint,

oil of lemon, oil of lime, various cherry, strawberry, and raspberry flavors; antihistamines such as Bristamin; and several of the vitamins such as B_1, B_2, B_6, B_{12}, calcium pantothenate, and niacinamide. If these products are made with a low moisture content, the dry powder will be stable for two to three years at room temperature, and after reconstitution with water, they will be stable for approximately one week under refrigeration.

Penicillin suppositories can be made with cocoa butter and spermaceti. Benzocaine, urea, various sulfa drugs, and some other antibiotics are compatible. The glycerin or carbowax type of suppository is not satisfactory for penicillin.

Penicillin ointments are of the grease type in which penicillin is stable for long periods of time. Petrolatum, beeswax, and mineral oil can be used. Lanolin can also be used if the peroxide number is very low. If lanolin with a high peroxide number is used, deterioration rapidly occurs. Penicillin is stable for a few days in hydrophilic ointment base U. S. P. A carbowax type, water-miscible base can be made, but penicillin is stable for only one to two months under refrigeration and for only a few days at room temperature. Oil-in-water or vanishing cream type ointments are only satisfactory for a few days under refrigeration.

Dry powders for reconstitution with water can be used for nasal solutions. In this type of product penicillin is compatible with lactose, sodium chloride, sodium citrate, ephedrine sulfate, phenylephrine·HCl, *dl*-desoxyephedrine·HCl, amphetamine, some of the various antihistamines, FDC Yellow #5, and FDC Green #2. These dry powders are stable for one to three years at room temperature, and after reconstitution they are stable for one week under refrigeration.

Ophthalmic ointments very similar to the regular ointment described above can be made. Dry powders for reconstitution with water can be made containing potassium dihydrogen phosphate, disodium phosphate, sodium chloride, potassium chloride, and parabens. These reconstituted solutions are isotonic and are stable in the reconstituted state for one week under refrigeration. The dry ingredients are stable for long periods of time.

In the parenteral field, sodium, potassium procaine, and many other penicillin salts can be suspended in oils such as peanut oil and sesame oil. These products are stable for long periods of time and at elevated temperatures. By gelling these oils with aluminum monostearate and suspending in them the same penicillin salts, better products are obtained which are stable for many years at room temperature and are also stable for at least one to two years at temperatures of 37° and 56°. From a standpoint of compatibility, one could also use oils such as corn oil, cottonseed oil, and soya bean oil. The oils used should have a moisture content of less than 0.1 per cent and a free fatty acid content of less than 0.1 per cent. Penicillin is also stable in mineral oil suspensions.

Aqueous suspensions for parenteral use are widely used. These aqueous suspensions may contain buffers such as sodium citrate and suitable suspending and dispersing agents such as carboxymethylcellulose, polyvinyl pyrrolidone, polysorbate, and lecithin. Preservatives such as the parabens and benzyl alcohol are used. Procaine·HCl, 2 per cent, is frequently used. Considerable attention must be paid to particle size in order to have products which are good in physical characteristics such as fluidity, ease of injectability, etc. These suspensions are stable for one to two years either under refrigeration or at room temperature.

In the parenteral field there are also products which are dry fills or dry powders for reconstitution with sterile water or physiological saline solution. Practically all compatibilities that we have mentioned for the other parenteral products hold true for this type of product. Although these products are quite stable for several years in the dry state, they are only stable for one to two weeks under refrigeration.

Streptomycin and Dihydrostreptomycin.—Streptomycin and dihydrostreptomycin are bases and form salts with anions. The salts are hygroscopic, very soluble in water, and insoluble in most organic solvents. The dry powder is very stable for long periods of time even at elevated temperatures. Some discoloration may occur but this does not appear to interfere with potency. Aqueous solutions are quite stable at a *p*H of 3 to 7 for long periods of time even at elevated temperatures. Strong acids or strong bases decompose them very rapidly. They are inactivated by hydroxylamine·HCl and activity is diminished by potassium permanganate, hydrogen peroxide, potassium iodide, and potassium chloride. They are compatible with formaldehyde, chlorocresol, phenol, and phenylmercuric nitrate.

Isotonic solutions with a 0.56° freezing point depression can be made using a 3.25 per cent solution of the streptomycin calcium chloride complex, a 2 per cent solution of streptomycin·HCl and an 8 per cent solution of streptomycin sulfate.

Aqueous nasal solutions (1,000 or 3,000 units per ml.) can be made with various additives such as chlorbutanol, parabens, lactose, *dl*-desoxyephedrine·HCl, ephedrine sulfate, amphetamine, phenylephrine·HCl, antihistamines such as Bristamin, sodium citrate, and FDC Yellow #5. These solutions are stable for long periods of time even at 37°.

Ear products can be made using glycerin or propylene glycol or a polyethylene glycol as the solvent. Various additives can be used such as phenol, sodium citrate, antihistamines such as Bristamin, urea, urethane, and sulfanilamide. These solutions are stable for long periods of time even at 37°.

Isotonic ophthalmic solutions can be made using sodium or potassium phosphates and sodium and potassium chlorides.

In oral products streptomycin and dihydrostreptomycin are compatible with starch, lactose, calcium carbonate, sugar, sulfaguanidine, sulfathalidine, sulfasuxidine, other antibiotics such as neomycin and bacitracin, saccharin, sucaryl, various flavors and dyes, kaolin, and pectin. These tablets, solutions, and suspensions are stable for long periods of time even at summer temperatures. Effervescent soluble tablets which are stable for long periods of time can be made with citric acid, sodium bicarbonate, and sodium benzoate.

Suppositories can be made with a cocoa butter base or with a water-soluble carbowax type of base. These are stable for long periods of time.

Streptomycin and dihydrostreptomycin are very stable in a grease type of base containing petrolatum, lanolin, and beeswax. They are also quite stable in the oil-in-water vanishing cream type base. One such ointment can be made with petrolatum, beeswax, stearic acid, non-ionic emulsifiers, propylene glycol, and water. Various antihistamines and/or various sulfa drugs can also be incorporated in this type of ointment.

Aqueous solutions for intramuscular use are quite stable for long periods of time even at elevated summer temperatures. At times these solutions develop color but it apparently does not affect potency. Most of this color formation can be eliminated by the addition of substances such as sodium bisulfite or sodium formaldehyde sulfoxylate. A preservative such as phenol or the parabens is usually used and about 2 to 3 per cent of sodium citrate is also used in these solutions.

Aureomycin.—Aureomycin is amphoteric and forms salts with acids and bases. The base is soluble to the extent of only 0.05 per cent in water. It is freely soluble in dioxane, carbitol, and various cellosolves, and is slightly soluble in the lower alcohols, acetone, ethyl acetate, and benzene. It is insoluble in ether and petroleum ether. Aureomycin is mostly used as the hydrochloride, which is a yellow crystalline powder, odorless and extremely bitter and nauseating in taste. The hydrochloride is soluble to the extent of about 1 per cent in normal saline and in water. The *p*H of such solutions is about 2.5 to 2.9. Solutions of the hydrochloride are stable for considerable periods of time if acidified and if stored under refrigeration. In neutral or alkaline solutions there is a rapid loss of activity and a tendency to precipitate. Aureomycin is stable in air, but light slightly affects the potency. The rate of decomposition of aqueous solutions of the base increases with increasing temperature and *p*H. For instance, at a *p*H of 8.5 there is a 12 per cent loss in potency after 30 minutes, a 20 per cent loss after one hour, and a 40 per cent loss after two hours. A 0.5 per cent solution of Aureomycin in normal saline at a *p*H of 7.5 to 7.8 is inactivated in 24 hours at room temperature. Solutions should be freshly prepared and should be refrigerated. A powder mixture useful in ophthalmic work contains 25 mg. of Aureomycin·HCl, 62.5 mg. of sodium chloride, 25 mg. of sodium borate, and 5 cc. of sterile distilled water. This is essentially a solution of the borate, which is less stable than the hydrochloride. This solution can be refrigerated for no longer than two days. The addition of 0.25 per cent methylcellulose to this ophthalmic solution is said to give a less irritating product. Aureomycin for intravenous use is buffered with sodium glycinate and is reconstituted with saline or glucose solution.

Terramycin—Terramycin base is a yellow crystalline amphoteric solid with a very bitter taste. It is soluble in water only to the extent of 0.025 per cent. It is also soluble in methyl alcohol, ethyl alcohol, acetone, and propylene glycol. It is insoluble in ether and petroleum ether. In the dry state the base and hydrochloride show no loss in activity after very prolonged storage at 25°. The hydrochloride shows a loss of 5 per cent activity after four months at 56°. No loss in activity occurred after four days at 100°. Terramycin forms well-defined salts with acids or bases. It forms a yellow crystalline hydrochloride which is soluble in water to the extent of about 1 per cent. An aqueous solution of the hydrochloride at a *p*H of 1 to 2.5 retains its potency for at least 30 days at 25°. At a *p*H of 7 this solution shows a 50 per cent loss in activity after seven days and greater loss in activity when the *p*H is above 7. Aqueous solutions in the *p*H range 3 to

9 have been found to be satisfactory for stability for at least one month at 5°. The acid salts of Terramycin slowly hydrolyze in solution and deposit Terramycin base.

Terramycin has been found to be compatible with sugar, petrolatum, sodium borate, and sodium chloride. Aluminum hydroxide gel should not be used with Terramycin. Milk can be used for the oral administration of Terramycin.

Terramycin powder for intravenous use is buffered with sodium glycinate. The powder for intramuscular use is combined with procaine·HCl and magnesium chloride.

Chloromycetin.—Chloromycetin is a neutral crystalline compound with a very bitter unpleasant taste. It is soluble in water to the extent of about 0.25 per cent and is freely soluble in alcohol, acetone, and propylene glycol. It is thermostable. Boiling in distilled water for five hours does not impair its biologic activity. At room temperature aqueous solutions are stable over the *p*H range of 2 to 9 for at least 25 hours. Aqueous solutions are rapidly inactivated in alkaline media. Aqueous solutions and solvent solutions darken on exposure to light. This change in color is associated with a loss in potency.

Chloromycetin is reasonably stable for ointment purposes in a carbowax type base and in the usual petrolatum-lanolin-beeswax type of ointment base. Solutions for topical use can be made by dissolving Chloromycetin in propylene glycol. Suppositories can be made in cocoa butter, and eye drops can be made using 0.2 per cent of Chloromycetin in a 0.5 per cent boric acid solution.

Bacitracin.—Bacitracin is a white to brownish, neutral, water-soluble powder having an intensely nauseating and bitter taste. It is readily soluble in water to the extent of 0.8 Gm. per ml. and soluble in methyl and ethyl alcohol. It is slightly soluble in higher alcohols and is insoluble in most other organic solvents such as ether, chloroform, and acetone. The stability of the dry powder parallels that of penicillin rather closely below 56°. At 37° the dry powder is satisfactory for stability for 15 months without significant loss. At 56° and higher, rapid inactivation of the dry powder results. Aqueous solutions of bacitracin at a *p*H of 5 to 7 lose about 10 per cent of their activity after two to three months at 4° but deteriorate within two to three days at 25°. Aqueous solutions are inactivated very rapidly below a *p*H of 4 and above a *p*H of 9. The most suitable *p*H range is 4 to 5. Buffers can be used with bacitracin. There is complete loss of activity in the presence of hydrogen peroxide. Bacitracin is precipitated by sodium chloride and salts of heavy metals in aqueous solution. For topical solutions one can use for the diluent sterile water, isotonic saline or procaine·HCl, 2 per cent. Stable ointments can be formulated in the anhydrous grease type of base containing petrolatum, lanolin, mineral oil, peanut oil, etc. Bacitracin is not stable in carbowaxes or the glycol type of ointment base. Nose drops of the dry powder type for reconstitution with water are stable in the dry state for long periods of time. When reconstituted these nasal solutions are stable for one week under refrigeration. In this type of product one can use *dl*-desoxyephedrine·HCl, ephedrine sulfate, amphetamine, phenylephrine·HCl, lactose, and various antihistamines such as Bristamin. These nasal solutions should be isotonic with a *p*H of 5.5 to 6.5.

Neomycin.—Neomycin is a base and can form salts with inorganic and organic acids. Neomycin sulfate is a white or grayish-tan amorphous powder which is almost odorless and has little taste. The sulfate is highly soluble in water but has very little solubility in organic solvents. The dry powder is very stable even at elevated temperatures for long periods of time. Aqueous solutions are quite stable over the *p*H range of 2 to 9 for long periods of time even at elevated temperatures. The highest activity is in alkaline solutions.

Neomycin is quite stable in many types of ointment bases such as the water-miscible or carbowax type, the grease type with petrolatum, lanolin and beeswax, and the oil-in-water or vanishing cream type. A water-miscible ointment of neomycin sulfate can be made with carbowax 4,000, carbowax 1,500, polysorbate 20, and propylene glycol. An oil-in-water vanishing cream type ointment or lotion can be made using glyceryl monostearate, polysorbate, propylene glycol, spermaceti, parabens, and water. A grease type of ointment can be made with petrolatum, lanolin, and mineral oil.

For nasal solutions neomycin is compatible and stable with *dl*-desoxyephedrine·HCl, ephedrine sulfate, amphetamine, phenylephrine·HCl, lactose, sodium chloride, and antihistamines such as Bristamin.

For oral solutions or suspensions neomycin is compatible with sweetening agents such as soluble and insoluble saccharin, sucaryl, sugar, hydrophilic colloids, or thickening agents such as carboxymethylcellulose, pectin, polyvinyl pyrrolidone, various FDC dyes, and many flavoring oils, bismuth subcarbonate, kaolin, sodium benzoate,

parabens, and various sulfa drugs such as sulfadiazine, sulfathiazole, and sulfaguanidine.

Tyrothricin or Gramicidin.—Tyrothricin is a white or brownish-white powder which is odorless and almost tasteless. It is a very stable antibiotic and can be heated at 100° for one hour without significant decomposition. It is practically insoluble in water, chloroform, and ether. It is soluble in ethanol, propylene glycol, various polyglycols such as carbowaxes, glycerin, and glacial acetic acid. Solutions in propylene glycol and the carbowaxes can be autoclaved without significant loss in activity. It can be solubilized in water using non-ionic wetting agents such as polysorbate U. S. P. and quaternary ammonium compounds such as octimet. Tyrothricin is very stable in aqueous solutions, alcohol, propylene glycol, and glycerin for long periods of time even at summer temperatures. It should not be used with agents such as Phemerol and Zephiran. It can be used with soaps and anionic detergents.

Tyrothricin is compatible (in various types of dosage forms) with benzocaine, antipyrine, hexylresorcinol, all of the presently available sulfa drugs, benzyl benzoate, potassium iodide, phenylmercuric salts, *p*-chloro-*m*-xylol, cetyl pyridium chloride, tetracaine, urea, various chlorophyllins, nitrofurazone, various antihistamines, epinephrine, panthenol, *dl*-desoxyephedrine·HCl, ephedrine sulfate, amphetamine, phenylephrine·HCl, sodium chloride, and various sodium and potassium phosphates. Water-washable ointments that are quite stable even at summer temperatures can be made with water, propylene glycol, petrolatum, paraffin and mineral oil, a fungistatic agent such as the parabens, and a non-ionic wetting agent.

Polymyxin.—Polymyxin B sulfate is an amorphous, cream-to-white colored powder. It is readily and completely soluble in water, isotonic saline, methanol, and ethanol and insoluble in ether, acetone, and hydrocarbons. There is some solubility in glycerin and propylene glycol. The dry powder is stable indefinitely and is quite heat stable. Aqueous solutions are rather stable and can be kept for many months at room temperature and longer under refrigeration. Moderate changes in *p*H do not greatly influence the potency. A *p*H of 3 to 5 favors maximum stability. Alkaline solutions are considerably less stable. The activity of aqueous solutions is partly destroyed by boiling for more than 10 minutes. Activity is rapidly lost in strong acids or alkalies. Polymyxin is stable in petrolatum, lanolin, carbowaxes, and polyethylene glycol diesters.

Erythromycin.—Erythromycin has a very bitter taste and is absorbed rapidly by the oral route. It is a base and forms salts with all common organic and inorganic acids. It is stable in the *p*H range of 6 to 8 with optimum stability at *p*H 7. The base is only soluble to the extent of 0.2 per cent in water. Activity is quickly lost in solutions below *p*H 6 and above *p*H 8.

The hydrochloride is very soluble in water. The base is freely soluble in acetone, ether, alcohol, and chloroform.

Carbomycin.—Carbomycin is a crystalline monobasic compound with weakly basic properties readily forming salts with organic and inorganic acids. The free base is only slightly soluble in water to the extent of 100 to 200 mcg. per cc. It is highly soluble in the lower alcohols, ketones, and esters. The hydrochloride and sulfate are quite soluble in water.

Viomycin.—Viomycin is a strong base. Several salts have been made, with the hydrochloride and sulfate being very soluble in water.

Viomycin loses its activity at high temperatures. The half-life at 100° is about 12 hours

Fumagillin.—Fumagillin is a weak acid which is insoluble in water but fairly soluble in chloroform.

Compatibility and Stability.—In general the various antibiotics are compatible with each other. However, it is necessary to test each new dosage form with each new combination of antibiotics for stability and compatibilities. In formulating and compounding various dosage forms with two or more antibiotics, one should be governed by the basic properties of each of the individual antibiotics present. A few examples of specific combinations with their compatibilities will be given.

Nose drops of the powder type for reconstitution with water containing either penicillin and bacitracin or neomycin and bacitracin or penicillin, bacitracin and streptomycin or dihydrostreptomycin can be made with *dl*-desoxyephedrine·HCl, sodium citrate, lactose, sodium chloride, ephedrine sulfate, amphetamine, phenylephrine·HCl, FDC Yellow #5, and FDC Green #2. In the dry state they are stable for long periods of time even at summer temperatures. After reconstitution they are stable for approximately one week under refrigeration.

A solution type of nasal product which is stable for long periods of time even at summer temperatures can be made using tyrothricin and streptomycin or dihydrostreptomycin along with chloro-

butanol, lactose, *dl*-desoxyephedrine·HCl, phenylephrine·HCl, sodium citrate, ephedrine sulfate, antihistamines, and FDC Yellow #5.

An ophthalmic powder containing penicillin and streptomycin or dihydrostreptomycin can be made with potassium dihydrogen phosphate, disodium hydrogen phosphate, sodium chloride, potassium chloride, and parabens. This powder is stable for long periods of time even at summer temperatures and after reconstitution with water is stable for one week under refrigeration.

Polyantibiotics.—The use of dosage forms containing two or more antibiotics is referred to as polyantibiotic therapy. There have been many reports and many discussions pro and con on polyantibiotic therapy. The result of all the reports on the effects of polyantibiotic therapy is to emphasize the fact that the reaction system comprising host, pathogen, and drug is most complex and is easily altered by even slight changes in the internal and external environmental conditions of the host or the invading pathogens. It is impossible to prescribe, without qualification, mixtures of antibiotics that will prove to be useful in all cases of a given infection. The ultimate test is the empirical one of trial and experimental clinical evaluation. I believe that polyantibiotic therapy is a very fertile field for future useful combinations and I am sure that as time moves on more and more antibiotic combination dosage forms of real therapeutic merit will be made available to the pharmacist and the physician.

Clinical Applications of ANTIBIOTICS

BY
LEWIS W. KANE, M.D.*

IT IS a very short time indeed since the first therapeutic results with penicillin were announced in 1941. Since then a steady stream of new agents has served to push the majority of infectious diseases farther and farther into the background. Members of the pharmaceutical industry should be justly proud of the advances they have made in this field.

Despite the brilliant success, unanticipated a few years ago, the surface has only been scratched, and the search for new agents must go on unabated. For example, more effective agents are needed in the therapy of tuberculosis, enteric disease, and the whole field of therapy in viral and mycotic diseases remains untouched. The easy pickings are over, however. It is going to be a great deal more difficult to find new antibiotics to displace the currently entrenched ones.

Along with the successful application of antibiotics have arisen unanticipated problems, such as the development of bacterial resistance, superinfection, and the increasing number of severe anaphylactic reactions to penicillin.

I shall not discuss individually each agent but shall review some of my own experience with antibiotics. All physicians are confronted almost daily with the selection of an antibiotic for a specific problem. So many effective agents are available in the treatment of certain infections such as pneumococcus pneumonia that the choice becomes a matter of personal preference. Every physician has his pet antibiotic, and this choice has been influenced in no small part by the effectiveness of advertising by pharmaceutical houses reaching his desk in staggering quantities.

The major reduction in the fatality rate of pneumococcus pneumonia has occurred in the older age group. Pneumonia, termed the old man's friend by Osler, is no longer the killer it used to be. Prior to the use of antibiotics, the mortality rate due to lung abscess cases at the Massachusetts General Hospital was between 30 and 40 per cent. At the present time it is in the neighborhood of 1 to 2 per cent. Not only has the mortality rate decreased, the necessity for surgery has also been greatly decreased.

While many antibiotics are effective in the treatment of pneumococcus pneumonia and

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choice may not be very important, in other infections a careful and wise choice of an antibiotic may be life-saving or make the difference between a rapid recovery and one that is delayed and complicated. Such a selection requires an intimate knowledge of how certain bacteria act and the clinical appearance of infections by these agents, since our initial choice is based entirely on clinical grounds. Antibiotic revision may be necessary as more information from the laboratory is forthcoming. However, this may require several days' precious time. The choice of an antibiotic, determined initially as it is on clinical grounds, will be a wiser choice in the hands of a well-trained physician and a haphazard one in the poorly trained.

Take the case of a patient with osteomyelitis and *Staphylococcus aureus* bacteremia. This patient was desperately ill, with a very high fever. In our experience, the *Staph. aureus* is less resistant to Chloromycetin than to other antibiotics including erythromycin. Accordingly, we started him on Chloromycetin before we had the results of the sensitivity tests. When the sensitivity studies came back from the laboratory, we felt we were on firm ground in continuing this agent since the organism was found to be sensitive to Chloromycetin. However, when in the course of the next three days the patient's clinical condition deteriorated, erythromycin, which then became available, was added. This produced a dramatic fall in temperature and improvement in his clinical condition with eventual recovery.

In another case it was necessary to revise antibiotic therapy after information from the laboratory was obtained. This patient had a *B. pyocyaneus* meningitis. He had been previously treated with penicillin, streptomycin, and most of the broad spectrum antibiotics without success. Because the organism was found to be sensitive to polymyxin, this agent was administered. The result was a complete clearing of his meningal infection. Without proper information from the laboratory insecurity in antibiotic choice may be manifested by hit-or-miss selection and frequent hysterical switching from one antibiotic to another as the situation becomes desperate.

Antibiotic Combinations

It makes a neat clinical problem when one is able to isolate a single infecting organism and is able to select one effective antibiotic. Whenever possible, one antibiotic should be used. Unnecessary combinations of antibiotics is usually a manifestation of insecurity on the part of the physician. There are many instances, however, such as with respiratory infections, urinary tract infections, peritonitis, and wound infections where the presence of many bacteria make it necessary to use antibiotic combinations for wider coverage. At this point it should be stressed that antibiotic interference is only a laboratory finding and except in one possible instance seems to play no role *in vivo*. Antibiotic synergism, however, is very real. In subacute bacterial endocarditis due to *Streptococcus faecalis*, the synergistic action of penicillin and streptomycin has made the difference between success and failure in many instances.

Abuse of Antibiotics

The success that antibiotics have achieved in many infections has led to their use in a variety of diseases in which their use is highly questionable. There is certainly no indication for using antibiotics in minor respiratory tract infections or in clean surgery—just to be sure.

It is easier in most instances to know when to start an antibiotic than it is to know when to discontinue it. For this reason, needlessly prolonged administration is often seen. However, prolonged administration may be indicated in certain infections such as bronchiectasis and infections associated with pancreatic fibrosis. Prolonged therapy raises problems of its own since various toxic manifestations are more likely to occur with longer administration. For prolonged usage in the management of bronchiectasis and other recurrent pulmonary infections, tetracycline has proved effective and much more readily tolerated than other broad spectrum antibiotics. I have treated a number of cases with tetracycline for over one year without any difficulty as regards toxicity. Stool cultures in these cases have shown no change in flora.

Side Reactions and "Scare" Effects

It appears to be a popular pastime at present to write voluminously on the toxic effects and complications resulting from antibiotic therapy. So well publicized in the lay and professional press are these side effects that both physician and patient are well aware of their possibility. This has, of course, served a useful purpose since a large segment of physicians in the past have prescribed antibiotics irrespective of the need or desirability of doing so. On the other hand, because of what I feel is overemphasis of certain toxic factors, we are beginning to see a most interesting phenomenon—patients are actually being denied effective antibiotic therapy when there are clear-cut reasons for their administra-

tion. Such has been the case in the past with Chloromycetin. The pendulum will swing back again to the mid-line, but for the moment it is made to appear in certain instances that the toxic effects are more hazardous than the conditions for which antibiotics are being used. In some cases they are, but this is a very small minority.

We are on the verge of even more exciting discoveries in the field of antibiotic therapy. What could be more thrilling than the possibility that within the next few years we shall have an antibiotic capable of controlling tuberculosis to the extent that pneumococcus pneumonia is now being controlled. It is an exciting prospect and one which I hope we shall see very soon.

Antibiotics in the HOSPITAL PHARMACY

BY WILLIAM E. HASSAN, Jr.*

ONE OF THE GREAT pharmaceutical contributions to medicine is the development and distribution, in therapeutically effective dosage forms, of that class of compounds which we call antibiotics.

Hospitals, as a group, are probably the largest consumers of antibiotics. The following tables released to us by the Research Society Inc. show that antibiotics represented 30.1 per cent of the total estimated drug and chemical purchases made by general hospitals during the fiscal year beginning April, 1953.

TABLE I.—HOSPITAL PURCHASES OF DRUGS AND CHEMICALS

		Per Cent
Estimated total drug and chemical purchases made by general hospitals (April 1, 1953–April 1, 1954)	$225,000,000	100.00
Total antibiotics	67,725,000	30.10
Broad spectrum group	30,285,000	13.46
Non-trade-marked penicillin	8,685,000	3.86
Streptomycin and dihydrostreptomycin	2,160,000	0.96
All other antibiotics	26,595,000	11.82

It is of further interest to note in Table II that, of the total antibiotic purchases, the broad spectrum group represented approximately 45 per cent.

TABLE II.—HOSPITAL PURCHASES OF ANTIBIOTICS

		Per Cent
Total antibiotics	$67,725,000	100.00
Broad spectrum group	30,285,000	44.72
Non-trade-named penicillin	8,685,000	12.82
Streptomycin and dihydrostreptomycin	2,160,000	3.19
All other antibiotics	26,595,000	39.27

In contrast to the retail purchase of antibiotic products, where oral type medication is the leading form dispensed, hospitals purchase and dispense a high per cent of injectables. It is of interest to note in Table III the approximate 60–40 relationship between parenteral and oral forms.

TABLE III.—PARENTERAL AND ORAL DOSAGE FORMS OF ANTIBIOTICS

	Per Cent
Total antibiotics	100.00
Injectable forms	56.54
All other forms	43.46

Purchase Policies.—Having indicated the volume of antibiotic purchases by hospitals, we must now mention some of the policies employed in the purchase of these items.

Most institutions follow the policy of purchasing only one brand regardless of how many are called for in the hospital. For example,

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* Pharmacist-in-Chief, Peter Bent Brigham Hospital, Boston, Mass.

procaine penicillin 300,000 units per vial may be purchased from company A; but any calls made by the staff for procaine penicillin by other firms will be filled with the product on hand. The same policy applies to all forms of penicillin, erythromycin, bacitracin, etc.

It is easy to follow this type of procedure when the hospital has a functioning formulary and therapeutic committee. Any physician who does not desire to use the product on hand must make a written request for a change of product to the therapeutic committee. The request is taken up at the next meeting and thoroughly evaluated. It is obvious that few staff men have either the time or the desire to question the selection made by the therapeutic committee, especially the medical members.

In regard to the broad spectrum group, most hospitals give the staff a choice of at least two members of the group. Others, particularly teaching and research hospitals, utilize the entire group: chloramphenicol, tetracycline (a single brand), oxytetracycline, and chlortetracycline.

Purchasing.—In purchasing a product, the hospital pharmacist must take into consideration the following points:

1. Is the product stable without refrigeration?
2. What is the stability of the product when put into solution? A non-buffered potassium penicillin G may be kept under refrigeration without appreciable loss of potency for three days, whereas the buffered form may be kept for seven days.
3. How far off is the expiration date?
4. What is the reputation of the manufacturer?
5. Past experience with the product.
6. Number of units required for use until next purchase.
7. Cost per unit.

Extemporaneous Mixtures.—Members of our medical staff very rarely request an extemporaneous mixture of antibiotics. When they do, they often ask for a mixture of bacitracin and penicillin for use as an irrigation or a wet dressing. Since the mixture is to be used within a few hours, it is aseptically prepared in sterile saline and dispensed. Fresh solutions are prepared as needed every six to eight hours.

Antibiotics in the RETAIL PHARMACY

BY JOHN J. DUGAN*

THE MANY TECHNICAL factors such as chemical and antibacterial stability, incompatibility, contamination, etc., which are involved in the preparation of most antibiotic dosage forms limits such compounding activity largely to specialized groups of drug manufacturers. Nevertheless, there are situations in which physicians wish to try some dosage form or combination of antibiotics that is not available from the manufacturer. It is with such situations in mind that the following information is offered.

In order to work properly with antibiotics, a sterile work area is necessary. The same area can be utilized for sterile ophthalmic compounding. The following equipment should be available:

Class A prescription balance

Castle Autoclave No. 777 (Wilmot Castle Co., Rochester, N. Y.)

Boekel Dry Heat Sterilizer or Oven (Macalaster Bicknel Company, New Haven, Conn.)

Barnstead Electric Still No. B.L.-1 (Barnstead Co., Forest Hills, Boston, Mass.)

Stanley Electric Magnifier No. 701 (Stanley Company, New Britain, Conn.)

Infra-red electric light on goose neck
Sterile syringe and containers for cortisone
Sterile syringe and containers for antibiotics
Sterile syringe and containers for oil
Containers for cotton balls
Container for sterilized filter papers
Container for sterilized wooden spatulas
Small and large forceps in sterilizing solutions

* Pharmacist, 75 College Street, New Haven, Conn.
Presented before the Section on Practical Pharmacy, A.PH.A. Convention, Boston, Mass., August, 1954.

(*Continued on page 709*)

FROM THE SECRETARY'S DIARY FOR OCTOBER, 1954

2nd This evening listening to the National Pharmacy Week broadcast entitled "The 100,000," sponsored by N.B.C. and Smith, Kline & French Laboratories in cooperation with the A.PH.A., as a feature of the 28th annual observance of this "Week." As usual, Lou Hazam did a splendid piece of script-writing depicting the pharmacist in the rôle of neighborhood adviser as well as purveyor of drugs.

5th Today in Easton, Pa., reviewing publication matters with our printers and working on the JOURNAL program for the ensuing year in addition to arranging for more speed on National Formulary paging and delivery of proof.

8th This morning attending a meeting in New York of the Board of Directors of the National Health Council, where plans for the next annual meeting were discussed and much interesting information was exchanged by the representatives of some 40 voluntary health organizations and professional societies. At noon, meeting with the A.PH.A. Committee on Legislation, of which Hugo Schaefer is chairman, and then a productive afternoon session of the Special Committee on Uniform State Legislation of the National Drug Trade Conference.

12th Yesterday and today with the Middle States Association of Colleges and Secondary Schools' Commission on Institutions of Higher Education, examining Long Island University and, with Dr. Beal, representing the American Council on Pharmaceutical Education in the inspection of the Brooklyn College of Pharmacy, which is affiliated with L.I.U.

15th The past two days and all of this day catching up with Washington affairs and giving especial attention to the work of adding a floor to our library, which will soon blossom forth with greatly improved book capacity and lighting facilities.

18th All of this day with Melvin Green, director of educational relations of the American Council on Pharmaceutical Education inspecting the Massachusetts College of Pharmacy for the Council and interviewing members of the Board of Trustees and faculty and addressing the student body. This evening at dinner with the entire college faculty and President Samuel Best.

20th Most of yesterday completing inspection of the Massachusetts College of Pharmacy and now moving over to the New England College of Pharmacy to review curricula, reinspect facilities, and meet with faculty and trustee members to confer on the accreditation status of this school.

22nd This morning at a conference with Dean Tice, chairman of our Committee on Student Branches, and Charles Rabe, planning for the program of the Student Section and other student branch activities. In the afternoon to Howard University to witness the laying of the cornerstone of the new College of Pharmacy building.

27th Much of this day spent on the telephone and in conferences with the Office of the Surgeon General of the Army endeavoring to clear up the status of a new surplus of pharmacists shipped to Brooke Army Medical Center without proper provision for their absorption into activities especially suited to their training.

28th More ado about the Army pharmacy situation and several conferences with Army personnel officers and others who have been directed to clear up misunderstandings about the assignment of pharmacists. Also a series of conferences dealing with medical education and its relation to pharmacy. All the while there is pressure to give more time to expansion of association activities and finding space in which to do the expanding.

30th An interesting morning and early afternoon session with Dr. J. R. McGibony of the School of Public Health of the University of Pittsburgh and hospital pharmacy representatives Don Francke, George Archambault, Tom Foster, and Gloria Niemeyer, looking toward implementation of a more complete survey of pharmacy procedures in hospitals.

31st Completing some journalistic efforts, uninterruped on this Sunday afternoon by telephone and other occupational hazards, and then to the Howard University campus for the first meeting of the inspection team representing the Middle States Commission on Institutions of Higher Education. Meeting Dr. Green and D. C. Pharmacy Board member John Street, whom we will join in the inspection of the College of Pharmacy.

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Hospital Pharmacy

In the Bulletin of the A.S.H.P.

Pharmacists providing service to hospitals will be interested in following the articles published in *The Bulletin of the American Society of Hospital Pharmacists.* In a recent issue (July-August) Dr. Albert Picchioni and Mr. Arthur G. Upson, both of the staff of the University of Arizona School of Pharmacy, cover antihypertensive drugs. Following a brief historical background on the treatment of hypertension and the therapeutic measures currently in practice, the various drug classifications are covered along with charts giving trade names, generic terms, and dosage forms. This article is of particular interest in view of the many preparations for treating hypertension which have been placed on the market recently.

Another article entitled "Improvement in Pharmacy Service Through Inspection," covers the regulations pertaining to pharmacy practice in hospitals as promulgated in Indiana's Hospital Licensing Act which became effective in 1946. This article is authored by J. Harold Jones, pharmaceutical inspector, Indiana State Board of Health, Indianapolis.

Other articles in this issue include one on "Practical Pharmaceutical Control," by John T. Murphy, chief pharmacist at the Massachusetts General Hospital, Boston, and one entitled "Utilization of Nonprofessional Personnel," by Walter M. Frazier, chief pharmacist at Springfield City Hospital, Springfield, Ohio.

The current issue of *The Bulletin* (September-October) includes abstracts of the papers presented at the recent Annual Meeting of the American Society of Hospital Pharmacists. Two of these—"A Study of the U.S.P. Requirements for Disintegration of Tablets," by Thelma C. Lezberg and John T. Murphy, Massachusetts General Hospital, Boston, Mass., and "A Proposal for a National Hospital Formulary Service," by Don E. Francke, University Hospital, Ann Arbor, Mich.—are printed in full in this issue.

In the study on the disintegration time for tablets the authors found the U.S.P. XIV disintegration time requirements to be unnecessarily long. Comparisons were also made with disintegration times for tablets as included in seventeen foreign pharmacopoeias. A total of 649 disintegration determinations were made on 97 different tablets used in the investigation. The tablets used in the study represented 39 different manufacturers.

The other article outlines in detail a proposal to the Society to sponsor a national hospital formulary service and make it available to hospitals at a reasonable cost. The suggested formulary service would be based upon a selection of drugs made by the Pharmacy and Therapeutics Committee of each hospital. Monographs for the drugs selected, together with other useful information, would be furnished. An integral part of the service would be the work of twelve subcommittees which would develop and evaluate special preparations and issue reports on such subjects as safety in the use of drugs in hospitals, Pharmacy and Therapeutics Committee policies, projects, and regulations, etc. Participating in the work of the subcommittees would be hospital pharmacists, teachers of pharmacy, physicians, dentists, nurses and others in the allied health professions. The importance of the formulary service as a long-range project of the A.S.H.P. is discussed giving interested individuals an opportunity to comment and make suggestions. A special Society Committee has been appointed to study the proposal and make specific recommendations to the Executive Committee.

A section of this issue is also devoted to the Proceedings of the Annual Meeting of the American Society of Hospital Pharmacists including reports of officers and committee chairmen and the report from the Division of Hospital Pharmacy of the A.PH.A. and A.S.H.P. Officers and Committees of the Society for the 1954–1955 term and the current membership list also make up part of this section in the September-October issue.

Institute for Administrators and Pharmacists

Hospital administrators and hospital pharmacists in Ohio have joined together to sponsor an institute to discuss problems of mutual interest. Sponsored by the Ohio Hospital Association and the Ohio Society of Hospital Pharmacists, the Institute Committee is headed by George B. Byrum, administrator, The Ohio Valley Hospital, Steubenville, Ohio. Meetings are scheduled for November 18 and 19 in Columbus.

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Letters

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ing too much attention to what it may do to the self-respect of a profession.

Those who still feel that the professional training of the pharmacist qualifies him to be trusted with the exercise of professional judgment will disagree with providing the easy way out for the law enforcement official. The net result of the type of procedure represented by the Maryland regulation is reduction in medication by prescription and an increase in over-the-counter sales of drugs. What this does to the practice of self-medication and to the practice of pharmacy is well known to every practitioner who has been watching trends in this field.—THE EDITOR]

Convention Comment

Sirs:

It is always interesting to hear the comments of persons who have attended a convention of the AMERICAN PHARMACEUTICAL ASSOCIATION for the first time after they have completed a week filled with sessions of different groups interested in the various specialities of which the profession of pharmacy is composed and following their opportunity to meet men and women whose names they often have seen in print and whose contributions to the advancement of pharmacy they have followed. In most instances they become enthused about the work the ASSOCIATION is carrying on and are amazed at the number of sectional and group meetings which go on simultaneously, offering everyone who attends an opportunity to carry away something new and valuable in the way of technical, scientific, or professional knowledge, to say nothing of the friendships which are made and renewed at these annual meetings. It must also be a source of great satisfaction to the many ASSOCIATION members who contribute their time and efforts to insure a successful convention.

Then, too, the proposals and actions taken by the related and affiliated organizations of the A.PH.A. at the meetings which they hold prior to or during the A.PH.A. convention week focus attention on what is in the minds of those who constitute the profession as a whole.

It is also of interest to listen to the comments of the hotel management and employees who invariably refer to an A.PH.A. convention as one that is considerably different from the general run of meetings they encounter. The comment usually is that "you people seem to come to these meetings to work. We have never seen so many crowded meeting rooms at one time and so much interest displayed on the part of those who attend. You have no commercial exhibits to detract attention from your serious business and your people are so uniformly polite and courteous that it is a pleasure to serve you."

All of this adds up to the general success of the convention and to the feeling on the part of the hosts and guests alike, that they may soon meet again.

Washington, D. C. Observer

Absorption and Secretion of Drugs through the Stomach

The stomach plays a more important rôle in the absorption and secretion of drugs than has heretofore been known, according to a study reported by P. A. Shore, C. A. M. Hogben, and B. M. Brodier of the National Heart Institute of the Public Health Service. In studies with rats, the stomach membrane is pictured as an oily barrier between gastric juice and blood plasma. Drugs may pass both ways through this membrane barrier. Alkaline drugs pass the barrier in the direction of the stomach and acid drugs pass the barrier in the direction of the blood stream. Even when administered directly into the blood stream, alkaline drugs such as quinine and other alkaloids are found quickly and in surprisingly high concentrations in gastric juices of the stomach but are not absorbed well from the stomach. Acid drugs such as the barbiturates and aspirin are absorbed rapidly from the stomach but are not secreted to any great extent. In between these acids and alkaloids are the neutral drugs—compounds which are intermediate. They are absorbed moderately from the stomach into the blood stream and secrete themselves moderately into the stomach. Different drugs which are representative of their class are being investigated, from strong alkaloids to neutral compounds and the acids. The rat stomach is separated from the rest of the gastrointestinal tract, a tube is inserted, and the drug in solution is introduced and allowed to stand a prescribed time. From 0 to 80 per cent of the drug is absorbed in one hour, depending on the physical characteristics of the drug.

Fat Diet and Heart Disease

Specialists from the United States, Italy, Northern Europe, Japan, South Africa, and Iraq, attending the World Congress on Cardiology in Washington, D. C., September 12–17, 1954, agreed that diet—and particularly the fats in the diet—seems to bear an important relationship to the prevalence of coronary heart disease. Dr. Gunnar Biörck of Malmö, Sweden, revealed that in Norway and Sweden the forced reduction of dietary fats during wartime was shortly followed by a sharp decrease in degenerative heart disease. It was pointed out by Dr. Ancel Keys of Minneapolis that a deposit of cholesterol in the coronary arteries is almost always involved in coronary heart disease and that the cholesterol comes from the blood where the concentration is affected by the total fats in the diet. Studies of peoples whose diet is low in fats such as the Bantu people of South Africa, who have relatively low blood cholesterol concentrations, reflect a low incidence of coronary heart disease. Similar findings among natives in Japan, Korea, and China were reported.

Symposium on Antibiotics

• • • • • • • • • • • • • *from page 703*

La Motte Universal *p*H set (La Motte Chemical Products Co., Towson, Md.)

Pipettes, graduates, funnels, filters, sterilized droppers, bottles, ophthalmic tubes, ring stand, sanitary container for powder papers

A knowledge of the solubilities of generally used antibiotics is essential in extemporaneous formulations. The solubilities are indicated in Table I.

The following prescriptions containing antibiotics have been found to be efficacious.

Antibiotic Gelatin Pastilles

Antibiotic	Prescribed Amount
Gelatin	50.0
Simple syrup	70.0
Distilled water	75.0
Soluble saccharin	0.5
Butoben	0.05
Oil of lemon	0.5

The convenient size and shape of the pastilles make them an ideal form for topical administration of antibiotics. The soothing effect of the gelatin is pleasing to the patients and the fresh lemon flavor appeals to children as well as adults.

The product is dispensed in antiseptic glass vials with a note to keep in refrigerator.

Gelatin Dressing of Antibiotics

Antibiotic	Prescribed Amount
Gelatin[a]	65.0
Butoben	0.05
Distilled water	135.0

A dressing (4.5 inches) on Parresined Lace-Mesh Surgical Dressing (Abbott) made with gelatin and preserved with Butoben.

Method of application: Cut a piece of the gelatin dressing sufficient to completely cover the affected area. Apply directly and cover with a pressure dressing of gauze bandage or ace bandage. Change the dressing twice daily.

Advantages: The patient receives comfort from the coolness of the dressing and later the secondary local anesthetic effect of Butoben continues the feeling of comfort. The bacteriostatic action of the antibiotic is usually dependable.

[a] Either Knox Minute Gelatin, or Pharmagel B, may be used satisfactorily.

Made freshly for each patient on individual prescription, the product is dispensed in an aseptic glass jar which *must be kept refrigerated to preserve potency.*

Dermatological Antibiotic Cream

Although petrolatum, wool fat, and certain proprietary absorption bases have been used as vehicles in antibiotic ointments with some success, investigations at the Massachusetts College of Pharmacy seem to indicate that emulsified bases of the oil-in-water type are more efficient, the efficiency being greatest when the water content of the base approximates 70 per cent. The following may be considered a typical base, combined with an antibiotic in a manner to insure maximum bacteriostatic action.

Antibiotic Cream

Antibiotic	Prescribed Amount
Glyceryl monostearate S. E.	15.0
Glycerin	6.0
Spermaceti	5.0
Liquid petrolatum, heavy	4.0
Butoben	0.1
Aerosol OT	0.02
Distilled water, *q.s. ad*	100.0

The antibiotic is dissolved in a small quantity of sterile saline and incorporated with a sufficient amount of the prepared base. Dermatologic antibiotic cream should be kept in the refrigerator in order to help preserve potency.

The product is a white, greaseless cream having a soft, smooth texture which will not stain clothing. It can be removed easily from the skin by washing with water. Patients should be instructed to remove from the jar the amount of antibiotic cream required for one application, using a wooden tongue depressor to prevent inactivation and contamination of the cream.

Double Capsules of Penicillin

Penicillin sodium	Prescribed amount
Aluminum hydroxide	0.23 Gm.
Sodium citrate	0.23 Gm.

Mix and make 1 capsule

Seal, coat with salol, and place in another capsule.

Ophthalmic Solutions

Antibiotic	Prescribed amount
Preservative	
Isotonic solution	

(*Concluded on next page*)

Symposium on Antibiotics

• • • • • • • • • • • • • *from page 709*

Prepare carefully and dispense with dating and note for refrigeration. *Note:* Cortisone suspension may be added, if physician desires.

Ophthalmic Ointments

The antibiotic is dissolved in saline solution and absorbed into a hydrophilic base with a preservative. Dispense in sterile tube.

Nasal Solutions

Penicillin	50,000 units per cc.
Propylene glycol	
Distilled water *aa*	Equal parts

Use with nebulizer.

Internal Preparations

Powders: Dispense in vials.
Suspensions or solutions in flavored bases.
Capsules.

External Wet Dressings

Antibiotic	Prescribed Amount
Potassium citrate	2.0
Aluminum citrate	0.6
Sodium chloride	2.0

Dispense in a vial. Dissolve in small amount of warm water and add cool water to 8 fl. oz. Use as a wet dressing.

Jelly for Physician's Office Use

Penicillin, Streptomycin, Bacitracin Jelly

Gelatin	1.5
Gifford Buffer *p*H 6	17.0
Glycerin	10.0
Penicillin	30,000 units
Streptomycin	0.3
Bacitracin	30,000 units
Isotonic saline solution	7.0

To be used by physician in office treatment. *Note:* Must be freshly prepared.

Under certain conditions the pharmacist may be in a position to cooperate with the physician as consultant in the preparation of therapeutically useful dosage forms that are acceptable to the patient. In order to be in a position to render such cooperative service the pharmacist must prepare himself and his equipment to justify the physician's confidence.

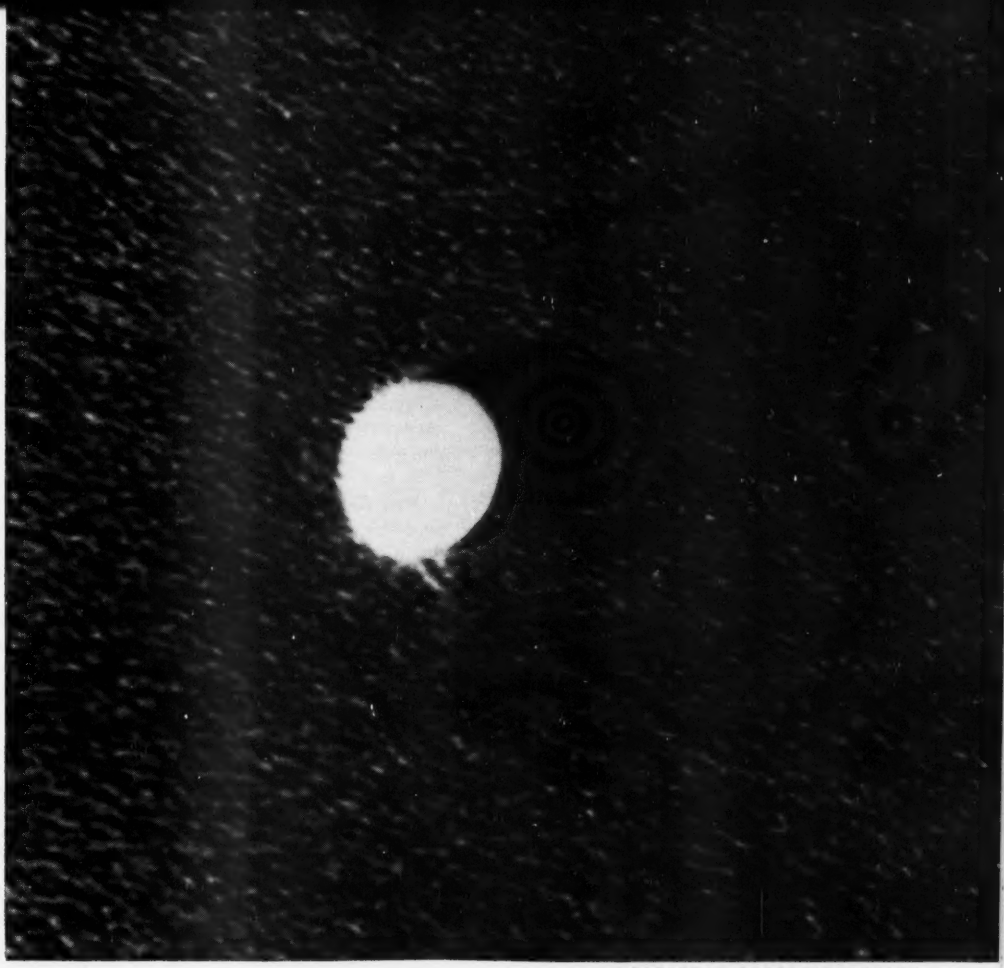
TABLE I.—SOLUBILITIES OF ANTIBIOTICS

Antibiotics	
Aureomycin	Soluble in solutions of alkali hydroxides and their carbonates
Aureomycin hydrochloride	Soluble in water or saline solutions
Bacitracin	Soluble in aqueous or saline media
Carbomycin	Soluble in chloroform, very slightly soluble in water
Chloramphenicol (Chloromycetin)	Slightly soluble in water; freely soluble in alcohol or propylene glycol
Erthromycin (Ilotycin)	Freely soluble in alcohol or ether; very slightly soluble in water
Neomycin sulfate	Very soluble in water
Oxytetracycline (Terramycin)	Soluble in acids or alkalis; very slightly soluble in water
Penicillin	Soluble in water or saline solutions
Benzathine penicillin G (Bicillin)	Low solubility in water
Polymyxin, polymyxin B sulfate (Aerosporin sulfate)	Soluble in water or isotonic saline
Tetracycline hydrochloride (Achromycin) (Tetracyn)	Soluble in water or saline

BCG Vaccination Report by WHO

A permanent and unique record of the largest vaccination campaign ever undertaken is now available to tuberculosis specialists and public health workers as a result of the publication by the World Health Organization (WHO) of reports covering mass BCG vaccination against tuberculosis in 23 countries. A total of nearly 30 million persons were tested with tuberculin, and almost 14 million of them received BCG vaccination against tuberculosis in the course of mass programs conducted for three years by the International Tuberculosis Campaign.

The International Tuberculosis Campaign grew out of an association formed very soon after World War II by the Danish Red Cross, the Norwegian Relief for Europe, and the Swedish Red Cross to undertake BCG vaccination in several European countries as an emergency measure against tuberculosis. WHO and UNICEF joined this undertaking in 1948. During the three-year period until 1951, an international staff of 200 doctors, 300 nurses, as well as over 1,000 national doctors, nurses, and BCG technicians participated in the program under uniform medical, organizational, and statistical methods. The total ITC expenditure amounted to $5,000,000 and national expenditures are estimated to have equalled that amount.



ELECTRON PHOTOMICROGRAPH

Staphylococcus aureus 35,000 X

Staphylococcus aureus (Micrococcus pyogenes var. aureus) is a Gram-positive organism commonly involved in a great variety of pathologic conditions, including

pyoderma • abscesses • empyema • otitis • sinusitis • septicemia

bronchopneumonia • bronchiectasis • tracheobronchitis • and food poisoning.

It is another of the more than 30 organisms susceptible to

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Upjohn

ALABAMA

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Mutchnik, Meyer, Chicago

INDIANA

Feldkamp, Rolland F., Evansville
Huff, John B., South Bend
Leist, Joanne C., Columbus

KANSAS

Dickerson, Warren W., Hutchinson

LOUISIANA

Crampton, James M., New Orleans
Riley, James E., Oberlin
Welsch, Felix H., New Orleans

MARYLAND

Richman, Philip, Annapolis

MASSACHUSETTS

Galluzzi, Nicholas V., Beverly
Polan, Harold H., Brookline

MICHIGAN

Heisler, John W., Detroit
Hughes, Mary Lou M., Buchanan
Quayle, John C., Wyandotte

MINNESOTA

Strom, Russell E. Y., Minneapolis

NEBRASKA

Franco, Frank J., Omaha

NEW JERSEY

Cameron, James C., Sparta

NEW YORK

Cohn, William A., Brooklyn
deNeergaard, W. F., Brooklyn

NORTH CAROLINA

Wolly, William J., Charlotte

OHIO

Pierstorf, Ervin W., Fairview Park
Weaver, Ruth M., Toledo

PENNSYLVANIA

Camarena, Mario, Philadelphia
Carroll, Francis T., Philadelphia
Custer, Charles W., Whitemarsh

TEXAS

Jones, Dick, Fort Worth

WASHINGTON

Peters, Stanley C., Seattle

FOREIGN

Donat, Thomas A., Toronto, Ontario, Canada
Pepin, Jean Marie, Montreal, Quebec, Canada
Stevens, David J., Montreal, Quebec, Canada
Uehara, Shoji, Tokyo, Japan
Ulagay, Nezih I., Istanbul, Turkey
Walker, Mary L., New South Wales, Australia

Deceased Members

Brown, Linwood Arnold, Lexington, Ky., August 17, 1954, *Life Member*
Cologgi, Roger J., Buffalo, N. Y.
Parker, Herbert W., Jonesboro, Ark.

Obituaries

On August 16 Dr. **Linwood A. Brown,** retired professor at the University of Kentucky, who was for many years director of the Public Service Laboratories at the University and also drug chemist and special analytical chemist of the Kentucky Agricultural Experimental Station, passed away at his home in Lexington, Ky. Dr. Brown was a graduate of the Louisville College of Pharmacy and the University of Michigan. Before becoming affiliated with the University of Kentucky, he served for three years as professor of Pharmacy at the North Dakota Agriculture College, Fargo, N. D He served three terms on the Kentucky State Board of Pharmacy.

He was a life member of the AMERICAN PHARMACEUTICAL ASSOCIATION, having first joined the ASSOCIATION in 1909; a member of the American Chemical Society, the Kentucky Pharmaceutical Association, and other pharmaceutical and chemical organizations.

Earl Beck, executive vice-president of Eli Lilly and Company, died unexpectedly at his home October 15 following a heart attack. Fifty-nine years old, he had been associated with Lilly's since April 27, 1914.

Survivors include the widow, Vera Torbet Beck, and two sons: Burton E. Beck, executive director of personnel and public relations at Eli Lilly and Company, and Allan V. R. Beck, chief pharmacist at the Indiana University Medical Center and president of the American Society of Hospital Pharmacists.

Immunization Information for International Travel

Yellow fever and cholera were banished from the United States long ago; smallpox, only recently. Since this is not the case in many other countries, and because all three may be prevented by vaccination, most countries require evidence of vaccination against one or more of these diseases when they consider themselves threatened by outbreaks elsewhere.

The International Certificates of Vaccination form is the only one accepted for foreign travel. In the United States, these forms may be obtained from district court clerks, passport and travel agencies, local and state health departments, and offices of the United States Public Health Service.

While some countries may not request travelers to show their certificates when they arrive from places considered safe, there is no assurance that this will always be the case because there may have been a fresh outbreak of a quarantinable disease somewhere along the traveler's route. If the certificate for the disease in question is not in order, the traveler may be subjected to surveillance or even to isolation for up to 14 days.

Detailed information on this subject is contained in a booklet entitled "Immunization Information for International Travel" which may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at a cost of 20c per copy.

THIS ADVERTISEMENT is part of a continuing Merck program to build increased physician support for all brands of ethical vitamin specialties. The campaign is running in leading medical journals.

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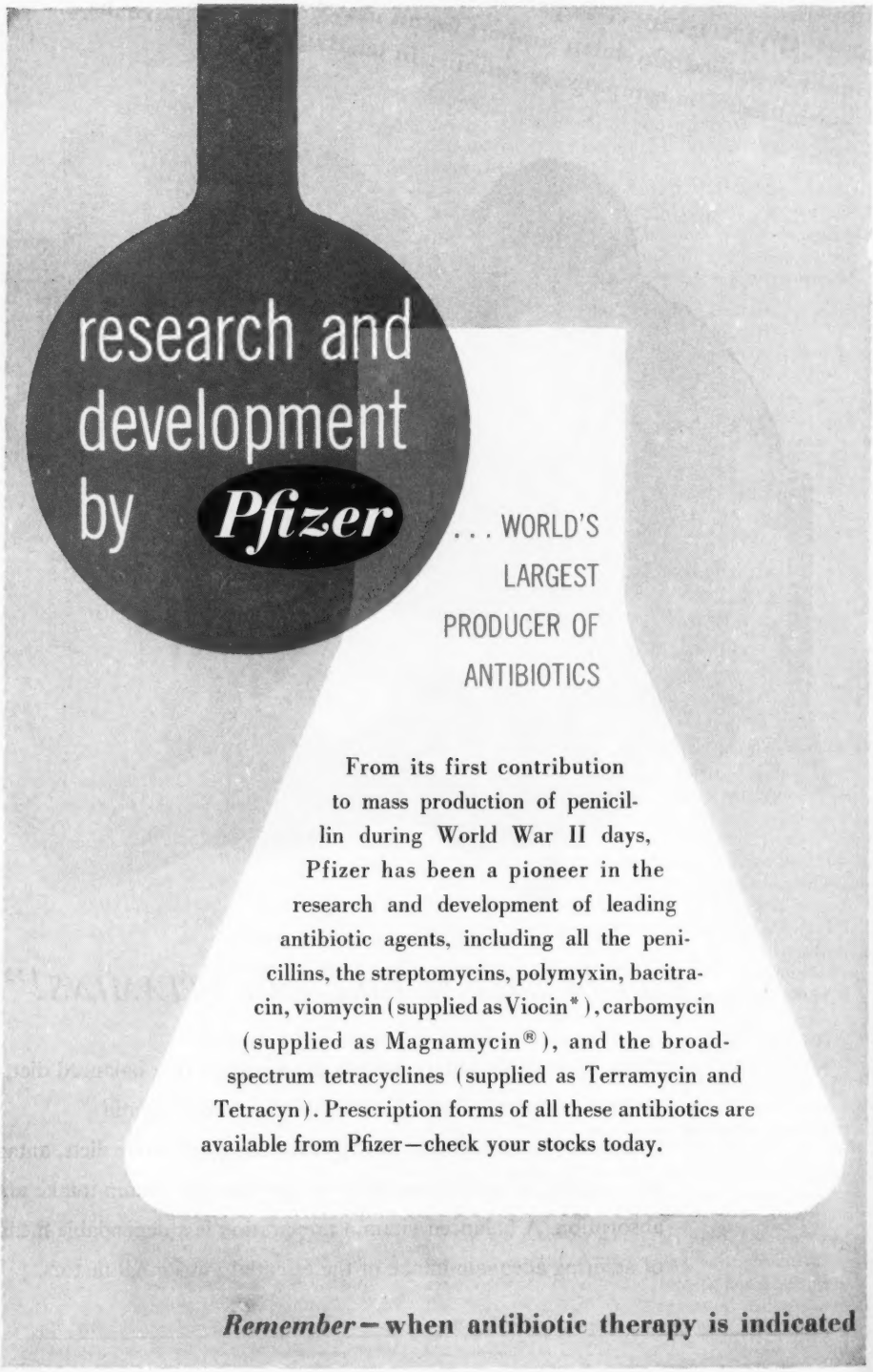
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NEW PRESCRIPTION PRODUCTS

All items on which information has been received in the past thirty days are reported here. Manufacturers are urged to send details of their new products as early as possible, so that pharmacists through these pages will have full information at the same time, or even before, products are detailed to the physician. For inclusion in this free editorial department, send descriptive literature to the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, *2215 Constitution Avenue, N. W., Washington 7, D. C. Where possible, all descriptions should follow the style shown on these pages.*

Chloromycetin-Hydrocortisone Ophthalmic Suspension

Description: Each 5-cc. vial contains: chloromycetin, 12.5 mg.; hydrocortisone acetate, 25 mg.; borate buffer equivalent to 100 mg. of boric acid; and benzethonium chloride to make a 1:10,000 solution after aseptic addition of 5 cc. of sterile distilled water to make the suspension. The prepared suspension is stable at room temperature for 10 days.

Indications: Treatment of ocular infections.

Administration: First 24 to 48 hours—2 drops in affected eye every one to three hours, day and night. After 24 to 48 hours—2 drops every three to four hours during the day. Continue until the eye has appeared normal for 48 hours.

Form Supplied: One 5-cc. vial and dropper cap in each package.

Source: Parke, Davis & Company, Detroit, Mich.

Chylipase Tablets

Description: Each tablet contains steapsin, 100 mg.; betaine, 200 mg.; and thyroid, 5 mg.

Indications: For correction of abnormal blood lipids.

Administration: Six tablets taken orally daily.

Form Supplied: Bottles of 100, 500, and 1,000 tablets.

Source: Columbus Pharmacal Co., Columbus, Ohio.

C.V.P. Syrup

Description: Each 5-cc. teaspoonful of syrup provides 100 mg. of citrus bio-flavonoid compound (natural vitamin "P" complex), with 100 mg. of ascorbic acid.

Indications: To help prevent capillary fragility and bleeding and vascular accidents by improving capillary tone and resistance.

Administration: 3 to 6 teaspoonfuls daily (300 to 600 mg. of flavonoid compound) in divided dosage.

Form Supplied: 4-oz., 16-oz., and gallon bottles.

Source: U. S. Vitamin Corporation, New York, N. Y.

Expasmus Tablets

Description: Each tablet contains dibenzyl succinate, 125 mg.; mephenesin, 250 mg.; and salicylamide, 100 mg.

Indications: Expasmus relaxes both skeletal muscle and associated smooth muscle spasm, relieves low back and arthritic pains, and acts as a sedative and relaxant in tension.

Administration: Two tablets every four hours. Maximum daily dose, 12 tablets.

Form Supplied: Bottles of 100.

Source: Martin H. Smith Co , New York, N. Y.

Ilotycin Drops

Description: Each bottle contains 1 Gm. of erythromycin as the crystalline ethyl carbonate in a dry mixture, to which 6 cc. of water is added to make 10 cc. of pale orange-colored suspension when dispensed.

Indications: Bacterial infections, particularly in infants.

Administration: Children—5 mg. of erythromycin (1 drop from the calibrated dropper) per pound of body weight every six hours, directly on tongue followed by a little milk or water.

Form Supplied: Packages containing 1 bottle of dry mixture (1 Gm. Ilotycin) and a dropper calibrated at 25 mg. and 50 mg.

Source: Eli Lilly and Company, Indianapolis, Ind.

Neosporin Ophthalmic Ointment

Description: Each gram contains Aerosporin sulfate (polymyxin B sulfate), 5,000 units; bacitracin, 400 units; neomycin sulfate, 5 mg., in a low-melting petrolatum base.

Indications: All bacterial infections of the eye, whether primary or secondary. Also indicated prophylactically to protect clean wounds. When applied to the eyes and lids for several days before surgery, Neosporin reduces the bacterial flora.

Administration: Locally.

Form Supplied: Tubes of $^1/_8$-oz. with ophthalmic tip.

Source: Burroughs Wellcome & Co. (U.S.A.) Inc., Tuckahoe, New York.

Pamine Bromide Syrup

Description: An elixir containing in each 5 cc. Pamine (methscopolamine bromide), 1.25 mg.
Indications: Treatment of peptic ulcers.
Administration: Orally.
Form Supplied: 4-oz. bottles.
Source: The Upjohn Company, Kalamazoo, Mich.

Pamine with Phenobarbital Drops

Description: A solution containing in each cc. phenobarbital, 20 mg.; and Pamine (methscopolamine bromide), 0.5 mg.
Indications: Infant gastrointestinal disturbances known as "colic."
Administration: Orally.
Form Supplied: 15-cc. dropper bottle.
Source: The Upjohn Company, Kalamazoo, Mich.

Pentoxylon Tablets

Description: Each scored tablet contains Rauwiloid, alkaloidal extract from *Rauwolfia serpentina*, 1 mg.; and pentaerythritol tetranitrate, 10 mg.
Indications: For angina pectoris and status anginosus.
Administration: One or two tablets four times a day usually at mealtime and before retiring.
Form Supplied: Bottles of 100 and 1,000 tablets.
Source: Riker Laboratories, Inc., Los Angeles, Calif.

Rau-Pertenal Tablets

Description: Each capsule-shaped tablet contains: *Rauwolfia serpentina* root, 50 mg.; *Veratrum viride* (equiv. to whole drug), 75 mg.; mannitol hexanitrate 30 mg.; and homatropine methylbromide, 2.5 mg.
Indications: To reduce tension in mild to moderately severe hypertension, to relieve the patient's anxiety and improve his mental outlook; also to control the gastrointestinal disturbance often associated with hypertension.
Administration: Orally, one tablet 3 or 4 times a day, preferably after meals.
Form Supplied: Bottles of 50, 100 and 500 tablets; on prescription only.
Source: Crookes Laboratories, Inc., Mineola, N. Y.

Rau-Tab Tablets

Description: Each scored tablet contains 2 mg. of the alseroxylon fraction of *Rauwolfia serpentina* alkaloids.
Indications: For control of mild to moderate hypertension and management of angina.
Administration: Orally.
Form Supplied: Bottles of 60, 500, and 1,000 tablets.
Source: National Drug Company, Philadelphia, Pa.

Sulfidium Tablets

Description: Each coated tablet contains: phenylazo-diaminopyridine HCl, 50 mg.; and sulfacetamide, 250 mg.
Indications: In urinary tract infections.
Administration: Two tablets four times daily, after meals and at bedtime; continued for several days after apparent clearing of infection. Contraindicated in sulfonamide sensitivity, renal insufficiency, chronic glomerulonephritis, pyelonephritis of pregnancy, or severe hepatitis. Patients should be informed of measures to prevent staining of undergarments by the dye-colored urine.
Form Supplied: Bottles of 100, 500, and 1,000 tablets.
Source: Columbus Pharmacal Co., Columbus, Ohio.

Trimilane Injection

Description: Trimilane injection contains in each cc. natural estrogenic substances, 2 mg.; progesterone, 50 mg.; and testosterone propionate, 25 mg.
Indications: In the treatment of functional uterine bleeding.
Administration: 1 cc. on each of 4 successive days.
Form Supplied: 10-cc. vials in boxes of 1, 6, and 25.
Source: E. S. Miller Laboratories, Inc., Los Angeles, Calif.

Other New Products

(Chemicals, clinical trial drugs, diagnostic aids, and equipment for the retail and hospital pharmacy)

ABDOL with Minerals Capsules

ABDOL with Minerals capsules, marketed by *Parke, Davis & Company*, contains the vitamins A, B_1, B_2, B_6, B_{12}, C, D, nicotinamide, folic acid, calcium pantothenate, and the minerals, iodine, manganese, cobalt, potassium, molybdenum, iron, copper, zinc, magnesium, calcium, and phosphorus in the form of salts. It is available in bottles of 100 and 250.

Adrenosem Salicylate Syrup—New Dosage Form

Each 5 cc. of Adrenosem Salicylate syrup contains 2.5 mg. of adrenochrome monosemicarbazone present as 65 mg. of sodium salicylate complex (carbazochrome salicylate). The syrup form of the hemostatic Adrenosem is recommended for preoperative or postoperative administration for control of bleeding, particularly in tonsillectomies and adenoidectomies. The dosage is: 2 teaspoonfuls three or four hours prior to surgery and 2 teaspoonfuls immediately before surgery; postoperatively: 1 teaspoonful every three or four hours for 3 or 4 doses. Children under 12 years, one-half the adult dose. Adrenosem Salicylate syrup is supplied in 4-oz. bottles by *The S. E. Massengill Company*.

Alkets Tablets

Antacid tablets—containing in each tablet calcium carbonate, 12 gr.; magnesium carbonate, 2 gr.; and

magnesium oxide, 1 gr.—are available in bottles of 100 from *The Upjohn Company*.

Bistrium Tablets

Bistrium tablets containing 125 mg. or 250 mg. of hexamethonium chloride in each tablet have been made available for oral administration in the treatment of hypertension by *E. R. Squibb & Sons*. It is recommended that the tablets be given in conjunction with *Rauwolfia*, which tends to stabilize their action, making smaller dosage possible. The initial oral dose of hexamethonium chloride is 125 mg. four times a day and is increased by gradual stages until the desired hypotensive effect is attained. The drug is not usually recommended alone because of the great variation in absorption from the intestine as well as in individual response, and adequate dosage may result in severe side effects.

Bonamine Tablets

Pfizer Laboratories have marketed Bonamine (meclizine HCl) as a relatively non-toxic, long-acting motion sickness preventive. It is recommended that two of the 25-mg. tablets be taken one hour before departure regardless of mode of transportation. Children take one tablet. The drug is effective for 24 to 30 hours.

Coricidin with Penicillin Soluble Powder

Schering Corporation has marketed a mixture which, when diluted with 42 cc. of water, yields a prepared solution containing in each 5 cc.: potassium penicillin G, 250,000 units; Chlortrimeton maleate, 2 mg.; and sodium salicylate, 112.5 mg. in a cherry-flavored liquid. Four to 6 teaspoonfuls daily in divided doses one hour before or two hours after meals are recommended in the treatment of infections responsive to oral penicillin. The product is dispensed on prescription only.

Cortef Solution, Sterile

A stable solution of hydrocortisone suitable for intravenous injection has been made available by *The Upjohn Company*. Sterile Cortef solution is recommended in the emergency treatment of adrenal failure and shock-like states associated with severe injury, emergency surgery, overwhelming systemic infection, brain surgery, acute allergic drug reaction, and adrenal surgery.

Dihydrostreptomycin Sulfate, Crystalline, and Combined Streptomycin and Dihydrostreptomycin Sulfate

Preparations of crystalline dihydrostreptomycin sulfate and combined streptomycin and crystalline dihydrostreptomycin sulfate have been marketed by *Lederle Laboratories Division, American Cyanamid Company*. The antibacterial activity of dihydrostreptomycin parallels that of streptomycin. However, clinical trials have demonstrated more effective therapeutic benefit and fewer ototoxic reactions when the two are combined. The new combined product, administered intramuscularly, has 50% each of crystalline dihydrostreptomycin sulfate and streptomycin sulfate. Both products are packaged in 1- and 5-Gm. vials.

EURAX Lotion 10%—New Dosage Form

Eurax lotion 10%, marketed by *Geigy Pharmaceuticals*, is similar in concentration and use to Eurax cream.

Gantrisin Ophthalmic Solution—New Package Size

Hoffmann-LaRoche has made available a 4% Gantrisin diethanolamine ophthalmic solution in a 5-cc. vial (with dropper). This size, together with the $^1/_2$-oz. vial size recently introduced, will replace the 1-oz. vial previously marketed.

Hydroderm Ointment

An anti-inflammatory, antibacterial ointment containing hydrocortisone acetate, bacitracin, and neomycin sulfate in a base of lanolin, petrolatum and wax has been marketed by *Sharp and Dohme, Division of Merck & Co., Inc.* The ointment is stated to relieve inflammation and pruritis promptly. The 1% ointment is available in 5-Gm. tubes.

Lederle Geriatric Products Add Intrinsic Factor

Purified intrinsic factor concentrate has been added to the *Lederle Laboratories'* geriatric products: Gevral, Gevrine, and Gevral Protein. The products are available in the following forms: Gevral capsules—bottles of 30, 100, 250, and 1,000; Gevrine capsules—bottles of 100 and 1,000; and Gevral Protein powder—$^1/_2$-lb. jars and 5-lb. cans.

Livitamin Capsules with Intrinsic Factor

Green capsules containing in each: desiccated liver, 0.45 Gm.; ferrous sulfate, 0.13 Gm.; thiamine HCl, 3 mg.; riboflavin, 3 mg.; niacinamide, 10 mg.; pyridoxine HCl, 0.5 mg.; *d*-calcium pantothenate, 2 mg.; folic acid, 1 mg.; vitamin B_{12}, 5 mcg.; and vitamin B_{12} with intrinsic factor, $^1/_6$ U. S. P. unit, have been made available by *The S. E. Massengill Company*. They are recommended for the treatment of pernicious anemia and as a supplementary agent in geriatrics. The capsules are supplied in bottles of 100, 500 and 1,000.

Marezine Tablets—New Package Size

Burroughs Wellcome & Co., Inc., has made 50-mg. Marezine (cyclizine) HCl tablets available in vials of 10 tablets for over-the-counter sale as a motion sickness preventive.

Gamma Globulin Suppliers—Correction

The October issue of THIS JOURNAL, page 645, included Armour, Parke, Davis & Company, and E. R. Squibb & Sons as suppliers of gamma globulin for dispensing on doctors' prescriptions. These companies do not have gamma globulin available for distribution by this means.

NEW PRESCRIPTION PRODUCTS INDEX

MAY, 1954—NOVEMBER, 1954

BY PRODUCT

Acetycol Tablets, Warner-Chilcott, July, 400
Achromycin Ear Solution, Lederle, Sept., 576
Achromycin Intramuscular, Lederle, Aug., 492
Achromycin Ointment, Lederle, Aug., 492
Achromycin Ophthalmic Ointment, Lederle, Aug., 492
Achromycin Soluble Tablets, Lederle, Aug., 492
Alevaire—new package, Winthrop-Stearns, Aug., 492
Ambenyl, Parke-Davis, Oct., 644
Ambodryl Hydrochloride Steri-Vial, Parke-Davis, Aug., 489
Ambrol Tablets, E. L. Patch, Aug., 489
Americaine Aerosol—New Size, Arnar-Stone, Oct., 645
Amphedase with Phenobarbital Kapseals, Parke-Davis, Oct., 644
Antirabies Serum, Lederle, June, 338
Antrenyl Bromide Pediatric Drops, Ciba, July, 401
Antrenyl Bromide Phenobarbital Tablets, Ciba, July, 401
Arfonad Ampuls, Hoffmann-La Roche, Oct., 644
Artamide Tablets, Wampole Labs., July, 400
ASF Capsules, Roerig, June, 338
Asymatrine Injection, Breon, July, 401
Atropine Sulfate Injection, Breon, June, 338
Aureomycin Calcium Oral Drops (Vet.), Lederle, June, 338

Bacimycin Ophthalmic Ointment, Walker Labs., Aug., 489
Beta-Methischol Syrup, U. S. Vitamin, June, 336
Biomydrin Nasal Drops and Otic, Nepera, May, 288
Blastomycin, Parke-Davis, Aug., 489
Blue Tongue Vaccine for Sheep, Lederle, Aug., 492
Broxolin Vaginal Tablets, Breon, July, 401
Brucella Abortus Tube Antigen, Lederle, Oct., 645
BSP Liquid, Otis E. Glidden, June, 338
Buro-Sol Antiseptic Powder "Doak," Doak, Oct., 645
Buro-Sol Powder "Doak" Concentrate, Doak, June, 338
Butodex Tablets, Paul Maney, June, 338

Cebenase Tablets, Upjohn, Oct., 645
Centrine Tablets with Phenobarbital, Bristol, July, 401
Chloromycetin Intramuscular, Parke-Davis, Sept., 576
Chloromycetin for Solution—Intravenous, Parke-Davis, June, 338
Choledyl Tablets, Nepera, May, 287
Cholografin Contrast Medium, Squibb, Aug., 492
Cillimycin Improved, Wyeth, May, 287
Clistin R-A Tablets—new dosage form, McNeil Labs., Aug., 492
Chlortran Capsules, Wampole Labs., July, 401
Clusintrin Capsules, Ayerst, McKenna & Harrison, Aug., 493
Co-Pyronil Suspension, Lilly, Aug., 493
Coricidin Syrup, Schering, Aug., 489
Corticloron Suspension, Schering, May, 287
Cortifan Cream, Schering, May, 287
Cortril Topical Ointment with Terramycin, Pfizer, Aug., 489
Crystoserpine Tablets, Smith-Dorsey, June, 336

Dactil Capsules, Lakeside, June, 336
Deka and Synephricol Syrups—formula changes, Winthrop-Stearns, Aug., 493
Delatestryl Solution, Squibb, July, 401
Dexalme L. A. 10—new dosage size, Meyer, July, 401
Dexamyl Spansule No. 1 and No. 2, SK & F, Aug., 490
Diamox Intravenous, Lederle, Oct., 645
Donnagel Suspension, Robins, Aug., 490
Dylephrin, Irwin-Neisler, Aug., 493
Dynolen Capsules, Merrell, June, 336

Elpafec, E. L. Patch, Oct., 644
Erythrocin Lactobionate, Abbott, July, 400
Erythrocin-Neomycin Ointment, Abbott, Aug., 490
Erythrocin Ointment 1%, Abbott, Sept., 576
Extralin F Capsules, Lilly, May, 289

Fasigyn Injection, Pfizer, June, 336
Febrile Antigens—Diagnostic, Lederle, Aug., 493
Femandren Linguets, Ciba, July, 400
Ferritrinsic Tablets, Upjohn, Aug., 491
Furadantin Pediatric Suspension, Eaton, June, 336

Gallogen Tablets, Massengill, June, 336
Gamma Globulin Available to Pharmacists, Oct., 645
Gantrisin Cream, Hoffmann-La Roche, May, 289
Gantrisin Ophthalmic Solution—new package size, Hoffmann-La Roche, Sept., 577
Gantrisin Syrup and Pediatric Suspension—new dosage forms, Hoffmann-La Roche, May, 289
Globotrin Tablets, E. L. Patch, May, 287

Hemacalcin Tablets, Harrower, Sept., 577
Hemicin Capsules–Replace Tablets, Walker, Oct., 645
Heparinate Solution, Cy Labs., June, 337
Hesperinate-C Capsules, Cy Labs., June, 337
Hormesteral, Miller Labs., Aug., 490
Hyadrine Tablets, Searle, Aug., 490
Hydrocortone Lotion, Sharp & Dohme, Sept., 577
Hypnorm Capsules, Massengill, May, 289
Hypovites, C. F. Kirk, May, 287

Ilidar Phosphate Tablets, Hoffmann-La Roche, July, 402
Ilotycin Ophthalmic Ointment, Lilly, Sept., 577
Indon Tablets, Parke-Davis, June, 337
Infiltrase, Armour, Aug., 490
Infusion Concentrate Hydrocortone, Sharp & Dohme, Aug., 490
Intribex Kapseals, Parke-Davis, Oct., 644
Intrinase Tablets, Upjohn, Aug., 491

Kerodex Cream, Ayerst, McKenna & Harrison, July, 402
Ketodase—diagnostic agent, Warner-Chilcott, Aug., 493
Koglucoid Tablets, Panray, Aug., 493

Ledercillin in Oil, Lederle, Aug., 493
Lente Iletin, Lilly, Aug., 491
Linoxsol Tablets, Durst, Sept., 576

Maxilets Tablets, Abbott, July, 402
Melmac Bandage, Davis & Geck, Sept., 577
Meratran Tablets, Merrell, Oct., 644
Mersalyn Solution, C. F. Kirk, July, 402
Mesopin Tablets—new dosage sizes, Endo, July, 402; Oct., 645
Metorbic Capsules, Elder, July, 400
Monodral Bromide, Winthrop-Stearns, July, 402
Mull-Soy Powdered, Borden, Sept., 577
Myleran Tablets, Burroughs Wellcome, Oct., 644
Myomephetane Tablets, Testagar, July, 400
Mysoline Tablets, Ayerst, McKenna & Harrison, July, 402

Neo-Cortef Drops, Upjohn, May, 289
Neomersyl Injection, Central Pharmacal, Aug., 493
Neosporin Ointment, Burroughs Wellcome, Aug., 491
Neostene Injection, Miller Labs., June, 337
NIDAR Tablets, Armour, July, 401
Nio-Piracene Tablets, Nion, May, 289
Nitroglyn Tablets—new dosage size, Key Corp., July, 402
N.R.C. Therapeutic Vitamin Capsules, West-ward, Aug., 493
Nyloxin Ampuls, Hynson, Westcott & Dunning, Aug., 491

OB-6 Capsules, Kremers-Urban, May, 289
Obocell Complex-formula change, Irwin-Neisler, Sept., 577

Pabasyl Sodium-Free Tablets, Ives-Cameron, Sept., 577
Parenzyme Intramuscular, National Drug, June, 337
Penasoid Suspension with Triple Sulfas, Parke-Davis, Oct., 645
Piperate Solution, Lincoln, Sept., 576
Polycycline Capsules, Bristol, July, 402
Polycycline Suspension-250, Bristol, Sept., 577
Prantal Cream 2%, Schering, May 287
Primoplex, Lederle, Sept., 577
Probutylin Capsules and Elixir, Rorer, Aug., 491
Pro-K-Mycin for Injection, Lederle, Sept., 577

Raupena Tablets, Crookes, May, 288
Rau-Vertin Tablets, National Drug, June, 337
Rauwidrine Tablets, Riker, May, 288
Rauwolfia Serpentina Tablets, West-ward, Sept., 577
Reserpoid Tablets, Upjohn, July, 401
R. S. Panthoderm Cream, U. S. Vitamin, May, 289

Sandril Tablets, Lilly, Sept., 576
Serpasil-Apresoline Tablets, Ciba, Sept., 576
Serfin Tablets, Parke-Davis, Oct., 645
Skopolate—Tablets, D. A. Tablets, P. A. M. Capsules, and Parenteral, Strasenburgh, June, 337
Sodium Sulamyd Ophthalmic Solution 10%, Schering, July, 401
Stoppering Machines for Sterile Vials, Popper, May, 289
Sulfa-Readicillin, Upjohn, July, 402,
Surgimin and Surgimin-T, Walker, July, 402
Synkayvite-C Drops, Hoffmann-La Roche, May, 288

Teldrin Spansule, SK & F, June, 337
Terramycin Intramuscular, Pfizer, July, 402
Tetracyn Intramuscular, Roerig, Aug., 491
Tetracyn Oral Suspension, Roerig, May, 288
Thorazine Tablets & Ampul Solution for Injection, SK & F, June, 338
Til-For Suspension, Tilden, May, 288

(Continued on next page)

Index

• • • • • • • • • • • *from preceding page*

Topatar Cream, Sharp & Dohme, May, 289
Trevidal Tablets, Organon, May, 288

Vasocort Solution, SK & F, Aug., 491
Vasocort Spraypak, SK & F, Aug., 491
Vibalt (B_{12}) and Thiamine Hydrochloride Parenterals, Roerig, May, 289

White's Otobiotic, White Labs., Aug., 492

Zincofax Cream, Burroughs Wellcome, May, 289
Ziradryl Cream, Parke-Davis, Aug., 492

BY MANUFACTURER

Abbott Laboratories
Erythrocin Lactobionate, July, 400
Erythrocin-Neomycin Ointment, Aug., 490
Erythrocin Ointment 1%, Sept., 576
Maxilets Tablets, July, 402
The Armour Laboratories
Infiltrase, Aug., 490
NIDAR Tablets, July, 401
Arnar-Stone Laboratories, Inc.
Americaine Aerosol–new size, Oct., 645
Ayerst, McKenna & Harrison Ltd.
Clusintrin Capsules, Aug., 493
Kerodex Cream, July, 402
Mysoline Tablets, July, 402
The Borden Company
Mull-Soy Powdered, Sept., 577
George A. Breon and Company, Inc.
Asymatrine Injection, July, 401
Atropine Sulfate Injection, June, 338
Broxolin Vaginal Tablets, July, 401
Bristol Laboratories, Inc.
Centrine Tablets with Phenobarbital, July, 401
Polycycline Capsules, July, 402
Polycycline Suspension-250, Sept., 577
Burroughs Wellcome & Company (USA), Inc.
Myleran Tablets, Oct., 644
Neosporin Ointment, Aug., 491
Zincofax Cream, May, 289
Central Pharmacal Company
Neomersyl Injection, Aug., 493
Ciba Pharmaceutical Products, Inc.
Antrenyl Bromide Pediatric Drops, July, 401
Antrenyl Bromide Phenobarbital Tablets, July, 491
Femandren Linguets, July, 400
Serpasil-Apresoline Tablets, Sept., 576
Crookes Laboratories, Inc.
Raupena Tablets, May, 288
Cy Laboratories
Heparinate Solution, June, 337
Hesperinate-C Capsules, June, 337
Davis & Geck Unit, American Cyanamid Company
Melmac Bandage, Sept., 577
Doak Pharmacal Co., Inc.
Buro-Sol Antiseptic Powder "Doak," Oct., 645
Buro-Sol Powder "Doak" Concentrate, June, 338
S. F. Durst & Co., Inc.
Linoxsol Tablets, Sept., 576
Eaton Laboratories, Inc.
Furadantin Pediatric Suspension, June, 336
Paul B. Elder Company
Metorbic Capsules, July, 400
Endo Products, Inc.
Mesopin Tablets—new dosage sizes, July, 402; Oct., 645
Otis E. Glidden & Co., Inc.
BSP Liquid, June, 338
Harrower Laboratory, Inc.
Hemacalcin Tablets, Sept., 577
Hoffmann-La Roche Inc.
Arfonad Ampuls, Oct., 644
Gantrisin Cream, May, 289
Gantrisin Ophthalmic Solution—new package size, Sept., 577
Gantrisin Syrup and Pediatric Suspension—new dosage forms, May, 289
Ilidar Phosphate Tablets, July, 402
Synkayvite-C Drops, May, 288
Hynson, Westcott & Dunning Inc.
Nyloxin Ampuls, Aug., 491
Irwin, Neisler & Company
Dylephrin, Aug., 493
Obocell Complex–formula change, Sept., 577
Ives-Cameron Company, Inc.
Pabasyl Sodium-Free Tablets, Sept., 577
Dylephrin, Aug., 493
Key Corporation
Nitrogen Tablets—new dosage size, July, 402
C. F. Kirk Company
Hypovites, May, 287
Mersalyn Solution, July, 402
Kremers-Urban Company
OB-6 Capsules, May, 289
Lakeside Laboratories, Inc.
Dactil Capsules, June, 336
Lederle Laboratories Division, American Cyanamid Company
Achromycin Ear Solution, Sept., 576
Achromycin Intramuscular, Aug., 492
Achromycin Ointment, Aug., 492
Achromycin Ophthalmic Ointment, Aug., 492
Achromycin Soluble Tablets, Aug., 492
Antirabies Serum, June, 338
Aureomycin Calcium Oral Drops (Vet.), June, 338
Blue Tongue Vaccine for Sheep, Aug., 492
Brucella Abortus Tube Antigen, Oct., 645
Diamox Intravenous, Oct., 645
Febrile Antigens—diagnostic, Aug., 493
Ledercillin in Oil, Aug., 493
Primoplex, Sept., 577
Pro-K-Mycin for Injection, Sept., 577
Eli Lilly and Company
Co-Pyronil Suspension, Aug., 493
Extralin F Capsules, May, 289
Ilotycin Opthalmic Ointment, Sept., 577
Lente Iletin, Aug., 491
Sandril Tablets, Sept., 576
Lincoln Laboratories, Inc.
Piperate Solution, Sept., 576
Paul Maney Laboratories
Butodex Tablets, June, 338
The S. E. Massengill Company
Gallogen Tablets, June, 336
Hypnorm Capsules, May, 289
McNeil Laboratories, Inc.
Clistin R-A Tablets—new dosage form, Aug., 492
The William S. Merrell Company
Dynolen Capsules, June, 336
Meratran Tablets, Oct., 644
Meyer Chemical Company, Inc.
Dexalme L. A. 10—new dosage size, July, 401
E. S. Miller Laboratories, Inc.
Hormesteral, Aug., 490
Neostene Injection, June, 337
National Drug Co.
Parenzyme Intramuscular, June, 337
Rau-Vertin Tablets, June, 337
Nepera Chemical Company, Inc.
Biomydrin Nasal Drops and Otic, May, 288
Choledyl Tablets, May, 287
Nion Corporation
Nio-Piracene Tablets, May, 289
Organon Inc.
Trevidal Tablets, May, 288
The Panray Corp.
Koglucoid Tablets, Aug., 493
Parke, Davis & Company, Inc.
Ambenyl, Oct., 644
Ambodryl Hydrochloride Steri-Vial, Aug., 489
Amphedase with Phenobarbital Kapseals, Oct., 644
Blastomycin, Aug., 489
Chloromycetin Intramuscular, Sept., 576
Chloromycetin for Solution—Intravenous, June, 338
Indon Tablets, June, 337
Intribex Kapseals, Oct., 644
Penasoid Suspension with Triple Sulfas, Oct., 645
Serfin Tablets, Oct., 645
Ziradryl Cream, Aug., 492
E. L. Patch Company
Ambrol Tablets, Aug., 489
Elpafec, Oct., 644
Globotrin Tablets, May, 287
Pfizer Laboratories, Chas. Pfizer & Company, Inc.
Cortril Topical Ointment with Terramycin, Aug., 489
Fasigyn Injection, June, 336
Terramycin Intramuscular, July, 402
Popper and Sons, Inc.
Stoppering Machines for Sterile Vials, May, 289
Riker Laboratories, Inc.
Rauwidrine Tablets, May, 288
A. H. Robins Company, Inc.
Donnagel Suspension, Aug., 490
J. B. Roerig & Company, Division of Chas. Pfizer & Company, Inc.
ASF Capsules, June, 338
Tetracyn Intramuscular, Aug., 491

(*Concluded on next page*)

Index

• • • • • • • • • • • • *from preceding page*

Tetracyn Oral Suspension, May, 288
Vibalt (B_{12}) and Thiamine Hydrochloride Parenterals, May, 289
William H. Rorer, Inc.
Probutylin Capsules and Elixir, Aug., 491
Schering Corporation
Coricidin Syrup, Aug., 489
Corticloron Suspension, May, 287
Cortifan Cream, May, 287
Prantal Cream 2%, May, 287
Sodium Sulamyd Ophthalmic Solution, 10%, July, 401
G. D. Searle & Company
Hyadrine Tablets, Aug., 490
Sharp & Dohme
Hydrocortone Lotion, Sept., 577
Infusion Concentrate Hydrocortone, Aug., 490
Topatar Cream, May, 289
Smith-Dorsey, Division of the Wander Company
Crystoserpine Tablets, June, 336
Smith, Kline & French Laboratories, Inc.
Dexamyl Spansule No. 1 and No. 2, Aug., 490
Teldrin Spansule, June, 337
Thorazine Tablets and Ampul Solution for Injection, June, 338
Vasocort Solution, Aug., 491
Vasocort Spraypak, Aug., 491
E. R. Squibb & Sons
Cholografin Contrast Medium, Aug., 492
Delatestryl Solution, July, 401
R. J. Strasenburgh Company
Skopolate—Tablets, D. A. Tablets, P. A. M. Capsules, and Parenteral, June, 337
Testagar & Company, Inc.
Myomephetane Tablets, July, 400
The Tilden Company
Til-For Suspension, May, 288
U. S. Vitamin Corporation
Beta-Methischol Syrup, June, 336
R. S. Panthoderm Cream, May, 289
The Upjohn Company
Cebenase Tablets, Oct., 645
Ferritrinsic Tablets, Aug., 491
Intrinase Tablets, Aug., 491
Neo-Cortef Drops, May, 289
Reserpoid Tablets, July, 401
Sulfa-Readicillin, July, 402
Walker Laboratories, Inc.
Bacimycin Ophthalmic Ointment, Aug., 489
Hemicin Capsules-replace tablets, Oct., 645
Surgimin and Surgimin-T, July, 402
Wampole Laboratories
Artamide Tablets, July, 400
Clortran Capsules, July, 401
Warner-Chilcott Laboratories
Acetycol Tablets, July, 400
Ketodase—diagnostic agent, Aug., 493
West-ward, Inc.
N. R. C. Therapeutic Vitamin Capsules, Aug., 493
Rauwolfia Serpentina Tablets, Sept., 577
White Laboratories, Inc.
White's Otobiotic, Aug., 492
Winthrop-Stearns, Inc.
Alevaire—new package, Aug., 492
Deka and Synephricol Syrups—formula changes, Aug., 493
Monodral Bromide, July, 402
Wyeth, Inc.
Cillimycin Improved, May, 287

1955 RED BOOK AVAILABLE

It has been announced that the 1955 edition of *Drug Topics Red Book* is now being delivered to all retail pharmacies, wholesale drug companies, and leading hospital pharmacies throughout the United States. The new 584-page reference book lists over 14,000 new products and more than 38,000 product changes. It carries over 140,000 drugstore product listings, showing all of the latest up-to-the minute prices and sizes. These items are produced by some 7,000 manufacturers. Also included are product descriptions on 1,400 prescription specialties and other products sold through pharmacies.

FDA CRIMINAL PROSECUTION ACTIONS TERMINATED IN SEPTEMBER

Over-the-Counter Sales of Prescription Drugs

Colorado Springs, Colo.—Refilled prescriptions for amphetamine and hormones without physicians' authorizations. Proprietor fined $1,500 and placed on probation for 3 years; associates fined $500 each and placed on probation for 1 year and 2 years, respectively.

Washington, D. C.—Sold ergot without physicians' prescriptions. Fined $300.

Chicago, Ill.—Sold amphetamine and barbiturates without physicians' prescriptions. Fined $600 and court costs of $36.70.

St. Joseph, Mo.—Sold amphetamine and barbiturates without physicians' prescriptions. Proprietor fined $505 and employee, $253.

Browning, Mont.—Sold amphetamine and sulfonamides without physicians' prescriptions. Fined $175.

Browning, Mont.—Sold penicillin and Ergoapiol with savin without physicians' prescriptions. Fined $175.

Freehold, N. J.—Sold amphetamine, barbiturates, and thyroid without physicians' prescriptions. Fined $500 and placed on probation for 3 years.

Bucyrus, Ohio—Refilled prescriptions for barbiturates without physicians' authorizations. Fined $100.

Misbranded Drugs

Cedardale Drug Co., Inc., Bronx, N. Y.—Shipped unlabeled, low-potency hormone tablets in imitation of Premarin tablets. Firm and defendant fined $1,000 each.

Hocking Drug Co., Inc., Spokane, Wash.—Accompanying labeling of Hocking's Liquid and Hocking's Formula capsules contained false and misleading therapeutic claims for the treatment of rheumatism in all its forms—gout, arthritis, neuritis, sciatica, and lumbago. Fined $26.

Ruling on Misbranded Drug

A drug store company, which had been held liable to a customer for dispensing the wrong drug, sought to be indemnified by the pharmaceutical manufacturer from whom it had bought the bottle of drugs from which it allegedly dispensed the wrong drug because the bottle was misbranded. Judgement for the pharmaceutical manufacturer is entered where it established its exercise of a high degree of care in its drug operations, and the plaintiff, relief, primarily on the self-serving testimony of the pharmacist who had dispensed the drug in question. The plaintiff failed to prove, by a preponderance of the evidence, that the defendant misbranded the bottle of drugs.

LOCAL BRANCHES

A joint meeting of the **Miami Branch** and the Southeastern Florida Society of Hospital Pharmacists was held at the Brunner Building of the Jackson Memorial Hospital, Miami, Fla., July 19. Dr. E. C. Brunner, an authority on tuberculosis, gave an informative talk on the history, diagnosis, and treatment of T.B. in Dade County, Fla., and Anna Thiel, Branch president, gave a complete report on the Hospital Society. John Porter, entomologist of the U. S. Public Health Service, spoke on control of insects and pests with the old and new types of insecticides. William Morrison, president of the Florida State Board of Pharmacy and immediate past president of the Florida Pharmaceutical Association, spoke on pharmacy laws and violations.

The **Philadelphia Branch of the A.PH.A.** met at Temple University School of Pharmacy on October 14. Speakers were Ruth W. Miller, who chose as her subject, "The Activities of the World Affairs Council" (she is executive director of the World Affairs Council of Philadelphia), and Dr. Joseph T. Freeman, who spoke on "New Approaches to Geriatric Therapy." Dr. Freeman teaches at Woman's Medical College Hospital.

William T. Fink, Branch secretary, reports that more than 170 Branch members attended the 1954 convention of the A.PH.A. in Boston, and that a total of 49 papers were presented at the convention by 31 of the membership.

The **Northwestern Branch of the A.PH.A.** has submitted the following list of new officers: Sam Levin, president; Kenneth Howell, vice-president; Louise Hunkins, secretary-treasurer. Kenneth Howell is also program chairman of the Branch, and H. H. Gregg and Bill Appel have been appointed to the Membership Committee.

Michael Iannarone, secretary of the **Northern New Jersey Branch of the A.PH.A.,** reports that a joint meeting was held on October 13 with members of the Student Branch of Rutgers University College of Pharmacy. The meeting, which was held at the College, was given over to a panel discussion on A.R.B. (any reliable brand), with Student Branch President Richard Doerer acting as moderator Participants were Professor Seymour Jeffries, Brooklyn College of Pharmacy; Bert Morgovsky, president, Northern New Jersey Branch of the A.Ph.A.; President Carlin of the Northern New Jersey Society of Hospital Pharmacists; Dr. Frank Rosen, editor, the *Bulletin* of the Essex County Medical Society; Raymond Hetterick, executive vice-president, The Harrower Laboratory, Inc.; and Bernard Gerson, commissioner, New Jersey State Board of Pharmacy.

Mary Hall Trubshaw, corresponding secretary, **Puget Sound Branch of the A.PH.A.,** reports the following new officers of that Branch: George Henrikson, president; Joe Birmingham, vice-president; Mary Trubshaw, corresponding secretary; Ted Taniguchi, recording secretary; Robarts Proper, treasurer; Jim Bracken, delegate.

Attendance at the October 14 meeting of the Branch numbered 125. L. D. Bracken presided and Dr. G. N. Aagaard, dean of the School of Medicine, University of Washington, was guest speaker. He discussed the relation of the School of Medicine and the allied professions to the community.

STUDENT BRANCHES

Lois Watkins, secretary of the **University of Arkansas School of Pharmacy Branch,** reports an attendance of approximately 45 at the September 21 meeting of the Branch.

Newly elected officers of the Branch for 1954–1955 are: Bill Davenport, president; Dwight Cheney, vice-president; Lois Watkins, secretary; and Frank Qualls, treasurer.

Dr. P. Jannke, faculty member, addressed the October 11 meeting of the **University of Connecticut College of Pharmacy Branch,** which was presided over by Vice-President Natalino Fresilli. A short address was also given by the group's faculty adviser, Professor W. R. Williams.

The October 5 meeting of the **Toledo University College of Pharmacy Branch** was highlighted by an informative talk and a film on antibiotics presented through the courtesy of Pfizer Laboratories. Fred Frey, Branch president, officiated at the meeting.

Bob Pearce, president, presided over the September 23 and October 6 meetings of the **Wyoming University College of Pharmacy Branch.** At the earlier meeting, the guest speaker was Dean D. W. O'Day, who addressed the group on the purposes and functions of the A.PH.A. At the October 6 meeting, plans were completed for the Homecoming Float. Ruth DeLand is chairman of the Homecoming Float Committee.

(Continued on page 728)

BRIEFLY NOTED

COLLEGES

The Alumni Association of the **Brooklyn College of Pharmacy, Long Island University,** plans to hold another Public Health Forum the evenings of March 1, 8, and 22, 1955, and will feature addresses by Harry J. Anslinger, U. S. Commissioner of Narcotics, Dr. Louis H. Bauer, secretary of the World Medical Association, and other outstanding medical, pharmaceutical, and public health authorities.

A.PH.A. President Newell W. Stewart was one of a list of outstanding speakers participating in the Bicentennial Conference of **Columbia University College of Pharmacy** held October 14 and 15. The subject he selected was "The Community's Health Information Center, the Pharmacy."

At its October meeting, the Beta Delta Chapter, *Rho Chi Society,* at **St. John's University College of Pharmacy** elected the following interim officers for the 1954–1955 academic year: president, John L. Dandreau; vice-president, Anthony J. Monte-Bovi; secretary-treasurer, Kenneth N. Heilshorn; historian, Hugh J. Luongo.

New students of the **University of Texas College of Pharmacy** were addressed in a convocation held October 7 by Walter Cousins, secretary of the Texas State Board of Pharmacy and editor of the *Southern Pharmaceutical Journal.* He discussed the Texas pharmacy law, with special reference to the experience requirement necesary to become a registered pharmacist.

The fifth annual Wisconsin Pharmacists' Institute was held on the University of Wisconsin campus November 4–6. Current professional problems related to the prescription department were the main theme of the three-day program covering four major areas of professional interest to pharmacists, with leading authorities in their respective fields serving as faculty. The institute is sponsored jointly by the **University of Wisconsin School of Pharmacy** and the Extension Division, in cooperation with the Wisconsin Pharmaceutical Association.

The appointment of three instructors to the faculty of the **University of Pittsburgh School of Pharmacy** has been announced. New instructors are John DeFeo in Pharmacology and Edward Hudak and Rose Goldfield in Pharmacy.

The appointment of three new members to the faculty of the **Temple University School of Pharmacy** and the promotion of another member has been announced. The new appointees include Dr. Frank Liu, assistant professor of Pharmacology and Physiology; John Autian, assistant professor of Pharmacy, and John Poole, assistant instructor in Chemistry. Dr. David E. Mann has been promoted from assistant professor to associate professor and he will be in charge of the Department of Pharmacology.

Mordecai W. Johnson, president, **Howard University,** officiated at the cornerstone-laying ceremony held at the University on October 22 on the occasion of the erection of a building to house the **College of Pharmacy.** Among the speakers participating in the ceremony were the Honorable Bradshaw Mintener, assistant secretary of the Department of Health, Education and Welfare, and Dean Linwood F. Tice, president-elect, American Association of Colleges of Pharmacy.

The **Philadelphia College of Pharmacy and Science** has announced the promotion of Robert E. Abrams, secretary of the American College of Apothecaries, to assistant professor in Pharmacy on its staff.

Having started on Friday, October 8, and on every subsequent Friday, through January 28, the **Philadelphia College of Pharmacy and Science** is sponsoring the "University of the Air," a program of lectures by members of its faculty which is televised over WFIL-TV, Philadalphia, WILK-TV, Wilkes-Barre, and WSBA-TV, York, Pa. The program may be viewed and heard from 11:15 to 11:35 a.m.

ASSOCIATIONS

Dr. Fred L. Soper, director of The Pan American Sanitary Bureau, Regional Office of the **World Health Organization,** has been re-elected director of the Bureau at the XIV Pan American Sanitary Conference meeting in Santiago, Chile. The term of office is four years, to commence February 1, 1955. This will be the third term that Dr. Soper will serve, having first been appointed to this post at the Caracas Conference in 1947 and again at Ciudad Trujillo in 1950.

L. W. Frohlich has been elected president of the **Association of Medical Advertising Agencies.** Robert Wilson and Helen Haberman were elected vice-presidents, and Ira Nichols, treasurer. Both Frohlich and Wilson are presidents of agencies bearing their names. Helen Haberman is a vice-presi-

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The Association, formed a year ago, is composed of agencies whose major activity is in the field of pharmaceuticals.

The **XIV Pan American Sanitary Conference,** held every fourth year, opened October 7 in Santiago, Chile, and continued for two weeks thereafter. It was attended by leading health officials of the Americas, comprising 23 delegations representing their respective governments.

At its annual meeting held this past September in Bretton Woods, N. H., the **New Hampshire Pharmaceutical Association** elected to office the following members for the period 1954–1956: president, Elmer A. Roentsch; first vice-president, William A. Styles; second vice-president, Rodney A. Griffin, II; third vice-president, Charles D. Dockham; executive secretary, George A. Moulton; treasurer, Anita DesRochers; and auditor, Edgar E. Goulet.

Meeting in Milwaukee the latter part of September, the **Wisconsin Pharmaceutical Association** elected Richard Strommen as its new president. Other officers elected are as follows: Norbert Beck, vice-president; Arthur Neumann and Henry Thiemann, honorary vice-presidents; Douglas Hunt, treasurer; and Jennings Murphy, executive secretary.

Jerome A. Budde was chosen president of the **Kentucky Pharmaceutical Association** at its annual convention held in August of this year at French Lick, Ind. Other officers named included Eddie Meyers, first vice-president; E. L. Williamson, second vice-president; J. W. Greene, third vice-president; E. M. Josey, secretary; and Phil Arnold, treasurer.

MANUFACTURERS

A decision in the patent controversy over the broad spectrum antibiotic, tetracycline, was rendered October 13 when the U. S. Patent Office granted the motions of **Chas. Pfizer & Co., Inc.,** to exclude **Bristol Laboratories** and **American Cyanamid Co.** from the interference. This leaves Pfizer as the only company currently in a favorable position to obtain a patent on tetracycline.

Henry Troemner announces a new policy on repairing their make of prescription balances. Whether the owner of the balance wishes an estimate before repairing or not, the repair work can be done in 10 to 14 days after receipt of the balance. A "loaner" balance, if requested, is sent to be used during the time of repair. New Class A balances are being offered at lower prices (see advertisement in THIS JOURNAL, *Scientific Edition*).

A team of scientists in the organic chemistry division of **Eli Lilly and Company** has synthesized lysergic acid, a basic compound in the structure of

ergot alkaloids which have broad uses in medicine. Chemists have been trying to do this for at least 36 years.

Dr. John A. Ellegood, director of Pharmaceutical Control for **Sharp & Dohme** since 1946, has been appointed to succeed Dr. Paul S. Pittenger as director of quality control by **Sharp & Dohme,** Division of Merck & Co., Inc.

AT RANDOM

Henry L. Janeway, director of operations for the American Red Cross in the Far East, has been awarded the U. S. Medal of Freedom for "meritorious services" during the Korean war.

Dr. Charles G. Zubrod has been appointed Clinical Director at the National Cancer Institute of the National Institutes of Health.

The Edwin L. Newcomb Memorial Award was given to **James L. Renaud** of the School of Pharmacy, Medical College of South Carolina, at the annual Plant Science Seminar held recently at Storrs, Conn.

On September 23, more than 5,000 physicians from coast-to-coast attended a session in postgraduate medical education via a nationwide, closed-circuit television symposium, sponsored by the **American College of Physicians** and **Wyeth Laboratories,** to observe and participate in a one-hour symposium on the management of hypertension.

Tour Offered Those Attending III Pan-American Congress

The Cuban Pharmaceutical Association (Colegio Farmaceutico Nacional de Cuba) has issued a general invitation to those attending the III Pan-American Congress of Pharmacy and Bio-Chemistry to join the Cuban Association's official tour en route.

The Congress will be held December 1–8, 1954, in São Paulo, Brazil, and the Cuban Pharmaceutical Association has planned two tours, "A" and "B," both beginning November 15 at Miami, Florida, and including stops, sight-seeing, and other entertainment in Havana, Cuba, Lima, Peru, Rio de Janeiro, and São Paulo, Brazil.

However, while tour "A" terminates December 10 with the return trip to Miami, tour "B" resumes at the conclusion of the Congress and continues until December 20, allowing for visits to Buenos Aires, Argentina, Santiago de Chile, and Balboa, Panama. All travel is by air.

Full information regarding rates, reservations, and incidental matters may be obtained by communicating with either Dr. Héctor Zayas-Bazán or Dr. Jorge A. Dominicis, Colegio Farmaceutico Nacional de Cuba, Malecón No. 307, Havana, Cuba, or with Gomez Tours, Empedrado 523, in Havana.

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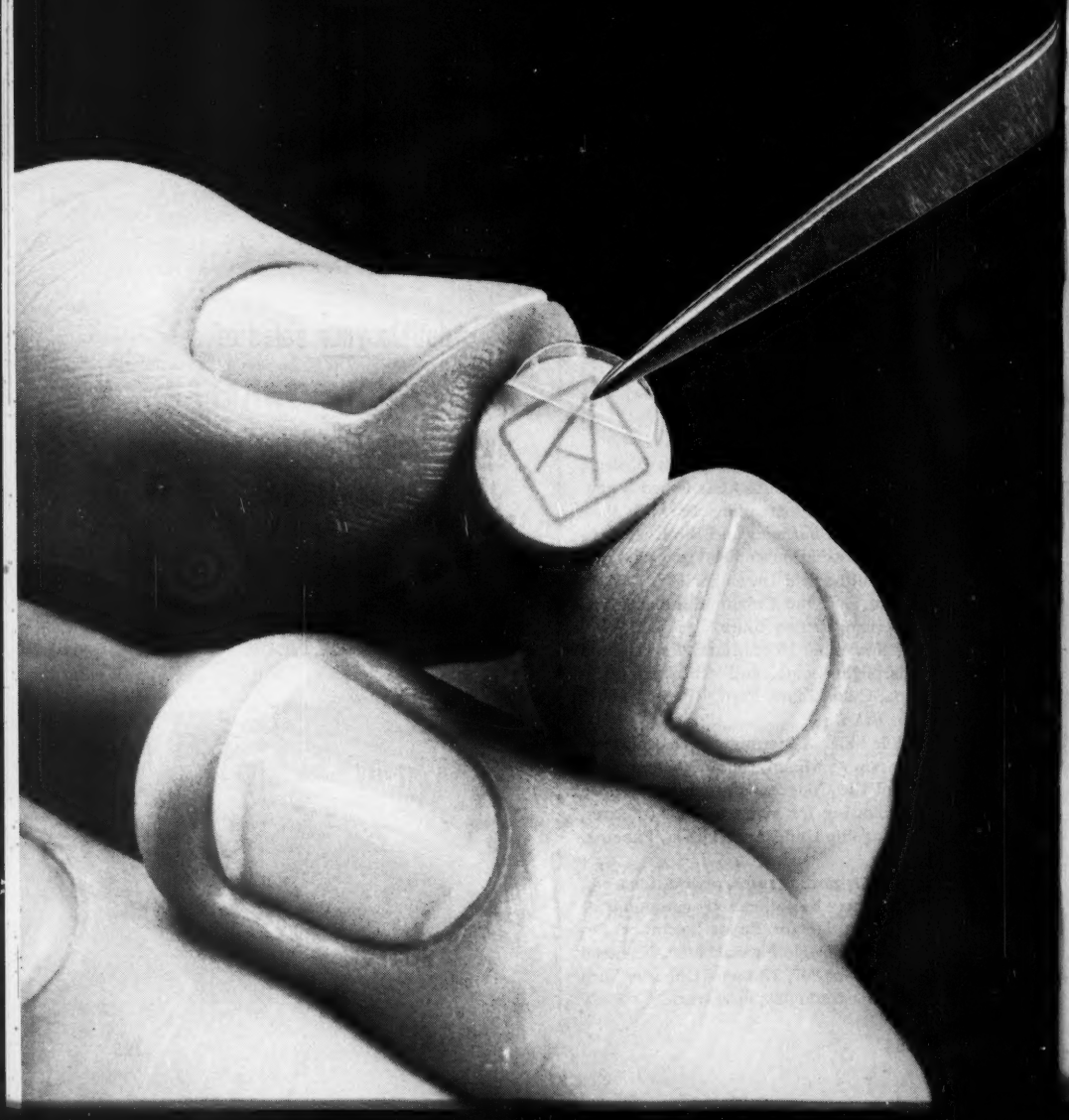

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Student Branches

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The College was featured on a radio program on October 7 and on television on October 11. Dean O'Day spoke briefly on the radio program of the opportunities that pharmacy offers. The TV program was devoted to televising Branch members engaged in pharmaceutical pursuits in the College laboratories.

Dr. John W. Schermerhorn, new faculty adviser, was introduced at the October 5 meeting of the **Massachusetts College of Pharmacy Branch.** The meeting was presided over by Branch President Roger Cloutier.

Rho Chi and Phi Delta Chi joined with **Idaho State College, College of Pharmacy Branch,** September 16, in the Pharmacy Building in a "get-acquainted" party.

Branch President Jack Dean officiated at the October 19 meeting of the **State College of Washington School of Pharmacy Branch.** Featured at the meeting was A.PH.A. Secretary Fischelis' recorded message to A.PH.A. Student Branches.

William Stutts, vice-president of the **Alabama Polytechnic Institute School of Pharmacy Branch,** officiated at the Branch's October 11 meeting which featured the audition of the record of A.PH.A. Secretary Fischelis' message to A.PH.A. student branches.

New officers of the **University of South Carolina School of Pharmacy Branch** are as follows: George S. Inman, president; W. B. Buckner, vice-president; Johanna Wright, secretary; Jack G. Watts, treasurer. Faculty adviser Dr. J. E. Hunter, Jr., reported on the Student Branch conference and pharmacy student Section meeting which he attended at the Boston convention of the A.PH.A. Dr. J. M. Plaxco, also a faculty adviser, addressed the meeting on the meaning of the A.PH.A. These talks were followed by an audition of the recorded message by A.PH.A. Secretary Robert P. Fischelis to the student branches.

The **Loyola University College of Pharmacy Branch** held its first meeting of the fall term on September 23. The first order of business was the appointment of the various committee heads for the coming year. Plans were also made for the Branch's annual banquet, which was set for April 23, 1955. Branch President Merlin Allen presided at the meeting.

The **University of Maryland School of Pharmacy Branch** held a joint meeting on September 21 with the Student Auxiliary of the Maryland Pharmaceutical Association. Planning for National Pharmacy Week highlighted the Branch's activities on this occasion. Branch President Sandbower officiated.

ADVERTISING INDEX

Abbott Laboratories
Erythrocin 726, 727
Iberol ..... inside front cover
Atlas Powder Company
(Span, Tween, Arlacel, Sorbo) 666
Hoffmann-La Roche Inc.
(Thephorin-AC) ..... inside back cover
Hynson, Westcott & Dunning, Inc.
(Nyloxin Ampules) ..... outside back cover
Lederle Laboratories (Achromycin) 668, 669
Eli Lilly and Company (Mi-Cebrin) 658
S. E. Massengill Company (Massengill Prescription Specialties) 707
Merck & Company, Inc. (Vitamins) 713
Owens-Illinois (Duraglas Rx Containers; Kimble, Plastainer Vials) 673
Parke, Davis & Company (Public Service—Merchandising) 663
Pfizer Laboratories (Terramycin and Tetracyn) 714, 715
Philadelphia College of Pharmacy and Science 672
J. B. Roerig and Company (Vi Terra, Am Plus, ASF, Bonadoxin, Heptuna Plus, OBron, OBron Hemtinic) 679
Schering Corporation (Coricidin Tablets with Penicillin) 671
Sharp & Dohme (Penalev) 667
Smith, Kline & French Laboratories
Thorazine 657
Benzedrex Inhaler 724, 725
E. R. Squibb & Sons, Division of Mathieson Chemical Corporation (Rau-Sed, Raudixin) 677
The Upjohn Company
Kaopectate 665
Panmycin 675, 711
Warner-Chilcott Laboratories (Methium, Peritrate) 705
Winthrop-Stearns Inc. (Thenfadil-S.P.C.) ... 661

MONTHLY DRUG INDEX

ABDOL with Minerals Capsules 717
Adrenosem Salicylate Syrup—New Dosage Form 717
Alkets Tablets 717
Bistrium Tablets 718
Bonamine Tablets 718
Chloromycetin-Hydrocortisone Ophthalmic Suspension 716
Chylipase Tablets 716
Coricidin with Penicillin Soluble Powder 718
Cortef Solution, Sterile 718
C.V.P. Syrup 716
Dihydrostreptomycin Sulfate, Crystalline, and Combined Streptomycin and Dihydrostreptomycin Sulfate 718
EURAX Lotion 10%—New Dosage Form 718
Expasmus Tablets 716
Gantrisin Ophthalmic Solution—New Package Size 718
Hydroderm Ointment 718
Ilotycin Drops 716
Lederle Geriatric Products with Intrinsic Factor 718
Livitamin Capsules with Intrinsic Factor .. 718
Marezine Tablets—New Package Size 718
Neosporin Ophthalmic Ointment 716
Pamine Bromide Syrup 717
Pamine with Phenobarbital Drops 717
Pentoxylon Tablets 717
Rau-Pertenal Tablets 717
Rau-Tab Tablets 717
Sulfidium Tablets 717
Trimilane Injection 717